MARCH
1956

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4285 Kc.	7011.75 Kc.	7053.5 Kc.	7145 Kc.	10.511 Mc.
4495 Kc.	7012 Kc.	7063 Kc.	7150 Kc.	10.515 Mc.
5050 Kc.	7016 Kc.	7064 Kc.	7156 Kc.	10.524 Mc.
5300 Kc.	7018 Kc.	7068 Kc.	7162.5 Kc.	10.530 Mc.
5360 Kc.	7021 Kc.	7072 Kc.	7163 Kc.	10.5465 Mc.
5456 Kc.	7021.5 Kc.	7073.5 Kc.	7174 Kc.	10.556 Mc.
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WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI: Sundays, 1100 hours EST, 7146 Kc. and 2000 hours EST 50 and 144 Mc. No frequency checks available from VK2WI. Intrastate working frequency, 7125 Kc.

VK3WI: Sundays, 1130 hours EST, simultaneously on 3573 and 7146 Kc., 51.016 and 146.25 Mc. Intrastate working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 3560 and 14342 Kc. 3560 Kc. channel is used from 0915 hours to 1015 hours each Sunday for the W.I.A. Country hook-up. No frequency checks available.

VK5WI: Sundays, 1000 hours SAST, on 7146 Kc. Frequency checks are given by VK5MD and VK5WI by arrangements on all bands to 50 Mc.

VK6WI: Sundays, 0830 hours WAST, on 7146 Kc. No frequency checks available.

VK7WI: Sundays, at 1000 hours EST, on 7146 Kc and 146.5 Mc. No frequency checks are available.

VK9WI: Sundays, 1000 hours EST, simultaneously on 3.5, 7, 14 and 144 Mc. Individual frequency checks of Amateur Stations given when VK9WI is on the air.

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Published by the Wireless Institute of Australia,
C.O.R. House, 191 Queen Street,
Melbourne, C.1.

EDITORIAL

★

FEDERAL CONVENTIONS

When a man's stomach is full and his appetite is satisfied, like other animals, he is usually content to drowse and ignore the world in general. On the other hand when the gnawing pangs of hunger bite at his vitals, he becomes ferocious and vociferous.

Judging by the growing clamour for more privileges and the removal of irksome restrictions, members of the Institute are awakening from the lethargy which has been apparent since 1953. There is a general awareness of the necessity for united action on the part of Divisions.

How can united action be best achieved?

The answer is obvious. "Federal Council must meet and thrash out a course of action."

In 1953 at the Twenty-third Convention it was decided that owing to increased costs and the lack of contentious items—following intensive and successful post-war campaign—Annual Conventions were an unnecessary financial drain on the Divisions. Council therefore resolved that the next Convention would not be held until business of sufficient importance to warrant the expense arose. In the meantime, Divisions were morally bound to create a fund and set aside a reasonable amount each year in readiness for this event whenever it occurred.

Since 1953 a new Division—VK9 (Papua and New Guinea)—has been formed. Problems have arisen concerning: Constitution, Contests, Band Allocation, Mobile, Novice and TV Licenses. Hence it now appears that Council must meet as soon as possible.

While much of the business of the Institute can be, and is, conducted by mail, there is no known substitute for personal contact and round table conferences when matters affecting high policy are involved. Furthermore, such personal contact is essential to maintain proper liaison between Divisions and avert the calamitous drift from "Federation."

"United we stand—divided we fall."

How can YOU expect Federal Executive to carry out your wishes unless you issue instructions through your Federal Councillor.

Keep yourself informed of Federal affairs, demand action now through the right channels. Don't waste energy on individual campaigns, boost and use the Institute's strength to the full.

FEDERAL EXECUTIVE.

THE CONTENTS

Experiments with 144 Mc. Underground

BY P. J. HEALY,* VK2APQ

ON Sunday, 4th December, 1955, a party consisting of members of V.h.f. Group of the N.S.W. Division of the Wireless Institute of Australia and the Sydney University Speleological Society, carried out some very interesting experiments on 144 Mc. in the Jenolan Caves area of N.S.W.

The aim was to ascertain if communication was possible between different sections of the caves using 144 Mc. Walkie-Talkie equipment. It was with some doubt as to what measure of success would be achieved, that the trip to Jenolan Caves was made by Perc. Healy, VK2APQ; Ted Howard, VK2XX; Charlie Fryer, VK2NP; Horrie Lapthorn, VK2HL; Vic Cole, VK2VL; John Thornthwaite, VK2ATO; Bob Ridgley, VK2ZAR; Cec. Cronan, Darrell Price, Wal Jacobs, who were joined at Jenolan by Brian O'Brien, Cres. Wallace, Laurie Bishop, Adrian Hunt, Tom Draper, and John Lehane, of the Sydney University Speleological Society, but the results achieved were beyond all expectations as the following details will indicate.

The equipment used consisted of four walkie-talkie units, including one crystal-controlled and three modulated oscillators, all with super-regenerative receivers, each with an input to the final stage of approx. 0.4 watt. The mobile units were two crystal-controlled transmitters running 6 watts input, receivers, a super-regen. superhet., and a Goon set. Antennae were quarter wave whips on the walkie-talkies, a three element beam and a gallows on the mobile units.

The first experiment was carried out in the Glass Cave, which is not open to the public. This cave is located about half a mile direct air line to the north of the Caves House, "accessable" by track requiring a two-mile trip over the ridge and down a 700 foot drop with numerous hairpin bends.

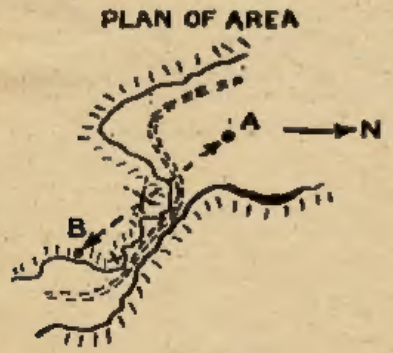

Fig. 1.

Entrance into the Glass Cave is made through a very narrow opening located 150 feet above the valley floor, necessitating a climb up a steep slope of approx. 35 degrees from horizontal, to the base of a limestone outcrop.

Fig. 1 gives an indication of the position of the cars operating as base station "A" located on the river flat in the floor of the valley to the cave mouth "B", a distance in a direct line of approx. one-third of a mile. The track from the car to cave was through a gorge along the river bed, then the 150 foot ascent.

Fig. 2 is a scale plan of the interior of this cave, and indicates the relative positions of "C" "D" "E" and "F" from which tests were made.

Three parties, equipped with walkie-talkies, entered the cave and operated from positions "C" "D" and "E". The plan was to endeavour to relay information back to "A" via the fourth walkie-talkie located at "B".

An interior view of Cavern "C" in the Glass Cave. The ladder descends down 25 feet. Refer Fig. 2.

It will be noted from Fig. 2 that the entrance to the cavern "C", which is 50 feet high, is made through a very narrow chimney and a drop of 25 feet to the floor. While to "D" required a 20 foot climb through a narrow neck to a chamber 15 feet high, and to "E" through a "Flattener" about one foot high to a chamber 15 feet high.

The first test made was between "B" and "C", the path between "A" and "B" had been previously checked by all parties. Signal reports were exchanged at readability 5 strength 7. When "B" relayed to "A" that contact had been established with the first link inside the cave at "C", signal report was R5 and S6. It was then suggested that "A" and "C" listen for each other, assisted by "B" as monitor, and to our amazement contact was made with signal reports of R5 and S7 to S8 each way, both "A" and "C" reporting they were copying each other better than they were copying "B". As "B" was then superfluous in the link, it was decided that "B" would make checks on signals away from the mouth of the cave, and found that signals from "C" were stronger at the foot of the slope than at the cave mouth, but as the other stations inside were in contact with each other, no check was made with "C".

Signal reports between locations "C" "D" "E" and "F" were always R5 and S8, proving that 100% reliable communications can be maintained intra Cave.

Tests made between "A" and "D" were R5 and S7, while from "A" to "F" signals were barely readable, apparently due to the narrow neck where "F" was located.

No checks were made between "A" and "E" although the signals from "A" were heard at "E".

The distance from the car station at "A" to the limestone bluff "X" (see Fig. 1) was about 1,000 feet and a further 700 feet of limestone between this point and the interior of the cave. Although no cross bearings were made, it appears that signals were received through the limestone rather than by ducting effects through the cave entrance, which the sketch (Fig. 1) shows was very well shielded in direction of the base station. Peaking the signals by use of the three element beam gave a definite indication that they were being received in a direct line and not by reflection from the surrounding cliffs.

The second experiment was made from the Orient Cave, which is one of the tourist caves, and is very much different in layout to the Glass Cave. The entrance to the Orient Cave is through a 380 foot tunnel, 8 feet high by 3 feet 6 inches wide (see Fig. 3) to a small cavern "D". Then through a companionway 7 feet high by 2 feet 6 inches wide, being covered on top and both sides with a ½ inch wire mesh for a distance of twelve feet opening into the main cavern "B", which is 50 feet high.

The mobile station was located in a car "A" (see Fig. 3) about 400 feet below the top of the mountain and 50 feet from the start of the limestone slope, which rose at an angle of 60 degrees to the horizontal. All stations were within 10 feet of the same horizontal datum.

The portable unit was the crystal-controlled walkie-talkie with a quarter wave whip antenna and approx. 0.4 watt input to the final. Checks were

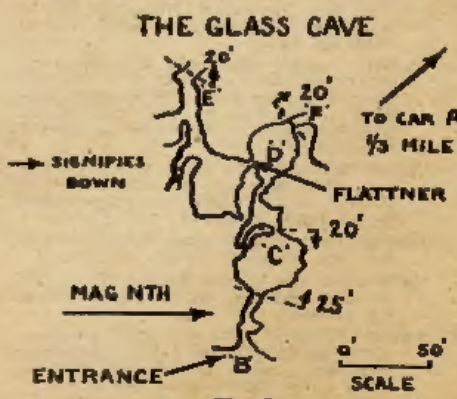

Fig. 2.

* 69 Taylor Street, Bankstown, N.S.W.

made in the tunnel where signals averaged R5 and S5. From the small cavern "D" signal strength increased to R5 and S7, and upon entering the wire mesh covered companionway, signals were completely inaudible. However, in the main cavern clear of wire mesh and guard rails, signals were exchanged at R5 and S8. The distance between "A" and "B" in a direct line was 580 feet, while the walking distance from the entrance of the tunnel to location "B" was 660 feet.

Directional checks made from the car "A" during the transmission periods from inside the cave showed a shift of up to 50 degrees away from the mouth of the tunnel when checks were being made from cavern "D", and a change of 20 degrees back towards the tunnel entrance when transmissions were made from the main cavern "B". It was noted that strongest signals were received by both stations when the portable unit operated from "B" and "D". An important point in these checks was that in the large cavern "B" signals were very much stronger than in any portion of the narrow tunnel despite the 100% increase in distance.

The limestone outside the marked section of Fig. 3 is solid and uniform, therefore it seems certain that signals were received over the direct path rather than by ducting through the tunnel.

As it was getting late in the day, and it was about 120 miles' trip back to Sydney, further tests could not be made. However, a further test is already being planned when cross bearings will be taken, together with checks on top of the mountain immediately above the caverns, with the view of determining the refraction of signals through the limestone and more accurately determining the path of signals.

It would appear that very good use could be made with v.h.f. links in cave search and rescue work, the exploration of cave systems, also the exact pinpointing of certain areas inside the caves by using mobile units with directional antennae located at various positions outside. These points will be investigated on the next expedition.

Sidelights of the trip were the night spent by VK2HL, VK2NP, VK2VL, and VK2ATO when the deep freeze set in and it snowed, while they were prepared for only a summer's night; a trip through a light snow storm by VK2XX, VK2APQ, Cec. Cronan and Darrel Price when the contact with VK2HL was possibly the first mobile contact on 144 Mc. made in N.S.W. during a snow storm; the inability of VK2APQ to negotiate the chimney in the entrance to the Glass Cave, reason being the chimney was too small; the reconnoitreing carried out by VK2ATO and VK2ZAR using their walkie-talkies which enabled the drivers of the cars to make the trip down the 700 feet drop and back up again.

I wish to acknowledge with thanks and appreciation the co-operation of Brian O'Brien,† B.Sc., President of the Sydney University Speleological Society, in arranging for these tests to be made, and for the assistance in the preparation of notes and maps for this article. Also to Mr. Best, the Director of the N.S.W. Government Tourist Bureau, and Mr. Finney, Superintendent of the Caves, for the help and co-operation they have rendered in making these tests possible.

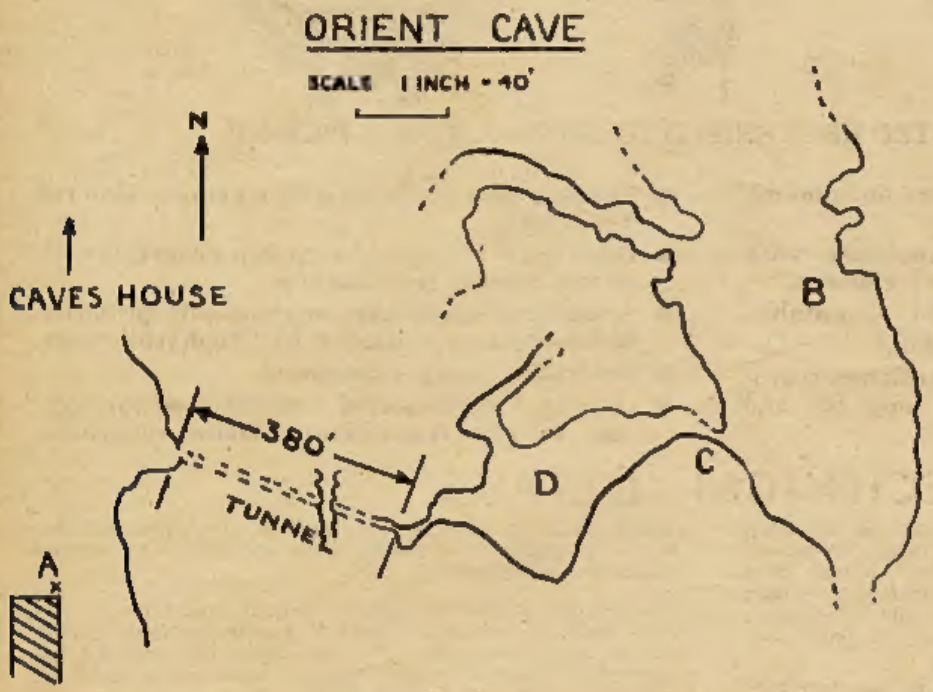

Fig. 3.

† 88 Arthur Street, Homebush, N.S.W.

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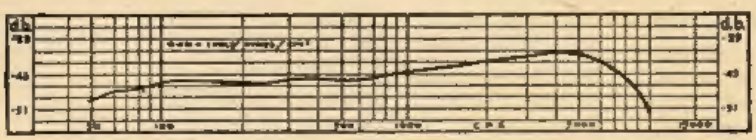

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Transformer Theory and Practice

PART TWO

BY V. J. McMILLAN,* VK2AWN

At this point we must consider another aspect of modulation transformers and that is the provision of, and reason for, the air gap in the iron circuit.

If you can remember the fundamental theory dealing with direct current solenoids, you will recall that the magnetic flux, produced in a core, is a function of turns and current flowing through the turns. Forget for a moment that our modulation transformer is a transformer, and look on it as a direct current solenoid wherein the turns are the secondary turns of the transformer, and the current flowing is the direct current supplied to the transmitter. We thus have all the elements of a direct current solenoid, i.e., turns, current flowing and an iron core. Under these conditions the total flux generated in the core is only limited by the value of ampere turns, and the magnetic reluctance of the core. In a core which is built up of overlapping laminations (which is the normal way to build a transformer) the magnetic reluctance is very low and so the total magnetic flux in the iron circuit is high. If we introduce a definite air gap in the magnetic circuit, the reluctance of the magnetic circuit is increased. The actual increase depends on the length of the air gap.

We thus have a means of controlling the **initial** flux density in the core due to the magnetising effect of the steady direct current.

The saturation value of transformer steels is usually of the order of 20,000 lines per square centimetre. Our modulation transformer must be so designed that at maximum signal input the saturation value of the steel is not exceeded. If we attempt to go beyond the saturation value, the excess signal input to the transformer primary does not appear on the secondary side.

Without going into the mathematics of the theory, it is sufficient to state that the initial direct current flux density in the core must not exceed 10,000 lines per square centimetre. Under this condition, the maximum flux density in the core with 100% modulation, does not exceed 20,000 lines per square centimetre.

Fig. 4 shows a familiar curve. It is more familiarly known to Radio men as the "modulation envelope" where the "A" line represents zero carrier, "B" is steady-state carrier without modulation, and "C" is peak value of the modulating signal "D".

Fig. 4 actually shows the flux conditions in the modulation transformer core.

"A" in this case shows zero flux.

"B" is the level of steady-state flux due to the direct current supplying the r.f. carrier.

"C" is the level of peak flux reached in the core when subjected to the modulating flux "D".

"D" is, of course, the actual signal in terms of a.c. voltage.

The reason for the air gap in the core of a modulation transformer should now be quite clear. The point now arises—how do we calculate the required air gap? There are several ways to do this, but the easiest way, in the opinion of the writer, is to neglect the reluctance of the iron core itself and simply calculate for the air gap alone. That is to say, we assume that the core requires no magnetising current, the air gap requiring the lot! This assumption is not as screwy as it sounds since the greater part of the total magnetising current of a transformer is required for the air gap. This leads to a very simple calculation for the air gap, viz.:—

Air gap in inches

$$= \frac{0.71 \times A \times N}{B} \qquad (e)$$

Legend:

B = Flux density in lines per square cm.

A = Amps.

N = Secondary turns on transformer.

0.71 = A constant.

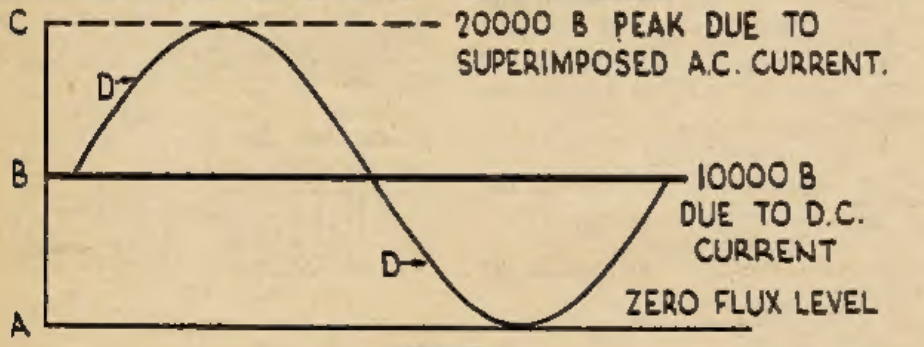


FIGURE 4.

The above legend requires some qualification. The value "B" is the value of B max. as calculated from the usual transformer formula. (The effect of d.c. does not come into this calculation.)

The value "A" is the r.m.s. value of alternating current flowing when the flux density in the core is the above value of B (flux density).

Again, without going into the theory of why, it is sufficient to say that to obtain the conditions as shown in Fig. 4, the value of "B" must be 14,100 lines per square centimetre, and the value of "A" in r.m.s. amps. alternating current must be the same value as the direct current supplied to the transmitter.

In our previously considered 60 volt-amp. transformer, let us assume that the secondary turns are 1640. Since the secondary voltage is 467, we find that the core section will be about 1.41 square inches (net) for a flux density of 14,100 lines per square centimetre at 50 cycles. We have previously considered that it is carrying a transmitter load of 0.1747 amps. direct current. From (e), therefore, we find that the air gap under these conditions will be:—

$$\frac{0.71 \times 0.1747 \times 1640}{14{,}100} = 0.0144 \text{ inches}$$

The value obtained by this calculation is only approximately correct, but it does show whether the air gap figure is practicable or impossible to attain. The actual air gap must be adjusted by testing the completed unit at a voltage, current and frequency corresponding to the values substituted in formula (e). Incidentally, it is most important that, for the purpose of formula (e), the frequency assumed to determine the value of "B" is the **lowest** frequency it is desired to reproduce. (In our example we took 50 cycles as being the lowest frequency.)

We have yet to consider the required turns ratio of our modulation transformer. Let us assume that we wish to use a pair of 807s in AB2 to provide the necessary 60 watts of power. We require to know what d.c. voltage and current they will need to provide this power. From these figures we can determine the turns ratio of our modulation transformer.

Power output calculations are somewhat involved and require a knowledge of factors which are not readily available to the average Amateur. However, the following formulae will give the required information with a reasonable degree of accuracy for class AB2 operation. The formulae **do not** apply to triodes.

Power Output (W) =

$$E \times I \times \text{Efficiency} \qquad (f)$$

Transformer plate to centre tap voltage (V) (in r.m.s. alternating current value) =

$$\frac{W}{I \times 1.11} \qquad (g)$$

Plate to plate impedance (Zp) (in ohms) =

$$\frac{(2V)^2}{W} \qquad (h)$$

Legend:

E = Direct current applied voltage.

I = Direct current supplied to the anodes.

W = Power output in r.m.s. watts.

1.11 = A constant.

In our example we require 60 watts of output from the modulator.

From published data on 807s in AB2 service, we know that the maximum anode(s) current is 0.24 amps. The efficiency we also know will vary from about 50% to 66%, depending on applied anode voltage and permissible distortion. From our knowledge of these facts and the use of formula (f), we find that an applied anode(s) voltage of 450 volts should be suitable, since:—

* 28 Waters Road, Naremburn, N.S.W.

From formula (e)

$450 \times 0.24 \times 55.5\% = 60$ watts.

The plate to centre tap applied voltage will be:—

From formula (g)

$$\frac{60}{0.24 \times 1.11} = 225 \text{ volts (r.m.s., a.c.)}$$

The plate to plate impedance will be:—

From formula (h)

$$\frac{[2(225)]^2}{60} = 3375 \text{ ohms}$$

We do not actually require to know the plate to plate impedance, but the author has shown the calculation as a matter of interest.

As shown above, the plate to centre tap voltage is 225 volts. Obviously the plate to plate voltage is twice this value, that is, 450 volts.

Referring back to our example, we said that the transformer was modulating a transmitter load of 600 volts and 0.1747 amps. Since we cannot exceed 100% modulation (without taking steps to avoid splatter), the **peak** a.c. voltage which we can apply to the carrier must not exceed the d.c. voltage. Since all transformer calculations are carried out on the basis of r.m.s. values, we must convert the peak value of voltage to a r.m.s. value, viz.:—

$600 \times 0.707 = 424$ volts r.m.s.

This 424 volts is the actual voltage we require across the load, but as we have seen, we must make allowance for the internal resistance drop of the transformer (at **low** frequencies).

As was previously mentioned, the actual load is 3435 ohms plus an additional effective transformer resistance of 148 ohms. The total no-load secondary voltage must therefore be:—

$$\frac{424 \times (3435 + 148)}{3435} = 443 \text{ volts approx.}$$

We assumed that the secondary had 1640 turns on it, so that the total primary turns must be:—

$$\frac{1640 \times 450(V)}{443(V)} = 1668 \text{ approx.}$$

A centre tap must be brought out at 834 turns.

Most of the calculations are now completed for our modulation transformer. One thing you will note is that the start of all calculations springs from the known required output voltage and current. On these small transformers it is usually sufficient to base the required output on the actual load plus 10% (for transformer losses). The required primary turns is the last item to be calculated.

The only factor we have not yet considered is—how to predetermine the transformer leakage reactance.

TRANSFORMER LEAKAGE REACTANCE

There are many formulae used to predetermine transformer leakage reactance. Every transformer manufacturer has his own pet theories on this subject. For our purpose we will only consider one which is applicable to our particular case, viz.:—

$$\%X = \frac{A.T. \times M.T. \times (A + B + 3C) \times F}{S \times 3\ (A.L.) \times V.T. \times 50 \times 1000} \quad (k)$$

where:

A.T. = Total secondary ampere turns.
M.T. = Mean length of leakage space in inches.
A = Effective depth of primary winding in inches.
B = Effective depth of secondary winding in inches.
C = Space between primary and secondary in inches.
S = Number of winding sections.
A.L. = Winding length plus (A + B) ÷ 3 (approx.) in inches.
V.T. = Volts per turn.
F = Frequency.
50 = A constant.
1000 = A constant.

This formula only applies to a transformer that has the primary and secondary windings arranged concentrically, i.e. one wound over the other.

We will consider, as an example, a transformer rated at 5000 volt-amps. (5 kVA.) single phase, 50 cycles, with one primary and one secondary coil, and a voltage ratio of 240/480 volts. At 5000 volt-amps. rating the secondary (480 volt) current will be:—

$$\frac{5000}{480} = 10.42 \text{ amps. (approx.)}$$

The primary turns are 178 and the secondary turns 356. The coil dimensions, shown as a centre line section in Fig. 5 (all dimensions in inches) are:—

A = 0.36 inches
B = 0.84 inches
C = 0.33 inches

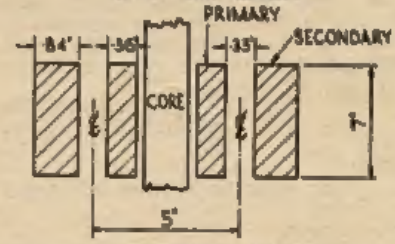


FIGURE 5.

Assuming that the coils are wound on round cylinders, the value of "M.T." in formula (k) will be:—

$5" \times 3.14" = 15.7$ inches approx.

The value for "A.L." in formula (k) will be:—

$$7" + \frac{0.36 + 0.84"}{3} = 7.4 \text{ inches}$$

The value for "A.T." in formula (k) will be:—

356 (turns) × 10.42 (amps.) = 3710 approx.

The value for "V.T." in formula (k) will be:—

$$\frac{480 \text{ (volts)}}{356 \text{ (turns)}} = 1.35 \text{ approx.}$$

The value for "S" in formula (k) will be 1 in our example since there is only one winding group. In general, the number of winding groups can be taken as the number of separate spaces between primary and secondary coils. More of this later.

We now have all the information necessary to determine the percentage leakage reactance of this transformer at 50 cycles.

From formula (k):—

$$\%X = \frac{3710 \times 15.7 \times [0.36 + 0.84 + 3(0.33)] \times 50}{1 \times 3(7.4) \times 1.35 \times 50 \times 1000}$$

$$= \frac{3710 \times 15.7 \times 2.19 \times 50}{1 \times 22.2 \times 1.35 \times 50 \times 1000}$$

$= 4.26\%$ approximately.

Fig. 6 shows the same transformer except that the windings have been arranged in a fashion that is technically known as double concentric. In this arrangement one half of the primary winding is wound inside the secondary winding and the other half is wound outside the secondary winding. (Incidentally the terms primary and secondary in this sense can be changed over without affecting the operation in any way.)

This arrangement of windings reduces the leakage reactance to a remarkable degree. Formula (k) still applies, but the values change considerably, viz.:—

A.T. remains the same.

M.T. now becomes the average of (5 × 3.14) and (7.34 × 3.14) = (15.7 + 23.1) ÷ 2 = 19.4 inches.

The values of A and B are now only one half of what they were before, that is, 0.18 and 0.42 respectively.

The value of S now becomes 2 because there are two winding groups.

The value of A.L. becomes slightly less, viz.: 7 + [(0.18 + 0.42) ÷ 3] = 7.20 inches.

The value for A + B + 3C now becomes: 0.18 + 0.42 + 3(0.33) = 1.59.

All other values remain the same so that we can substitute the values in formula (k) and obtain:—

$$\%X = \frac{3710 \times 19.4 \times 1.59 \times 50}{2 \times 21.6 \times 1.35 \times 50 \times 1000}$$

$= 1.96\%$ approximately.

We can thus see that, in the particular example quoted, we have reduced the leakage reactance to something less than 50% of what it was originally.

If the space between the primary and secondary coils is small as compared with the winding depth, the reduction in leakage reactance is even more marked.

Fig. 7 shows the same transformer with the windings arranged double concentrically and, in addition, the windings are divided over two legs of the core.

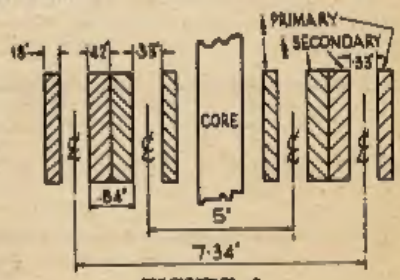


FIGURE 6.

The values to insert in formula (k) now become:—

M.T. is the average of (5 × 3.14) and (6.5 × 3.14), which is (15.7 + 20.4) ÷ 2 = 18.05 inches.

The values of A and B as shown in Fig. 7 are 0.09 and 0.21 respectively.

The value of S now becomes 4 because there are four winding groups (or 4 spaces between primary and secondary coils).

The value for A.L. becomes: 7 + [(0.09 + 0.21) ÷ 3] = 7.1 inches.

The value for (A + B + 3C now becomes: 0.09 + 0.21 + 3(0.33) = 1.29.

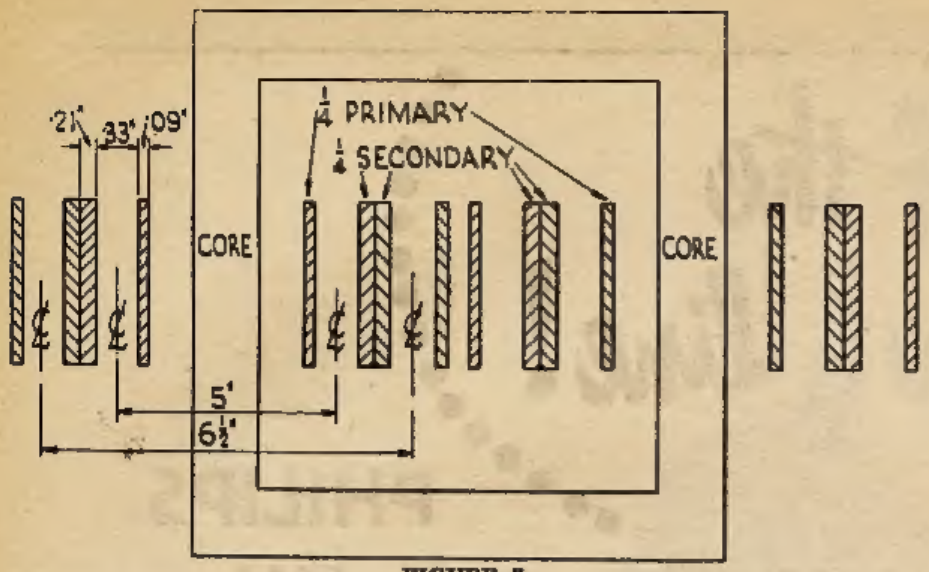


FIGURE 7.

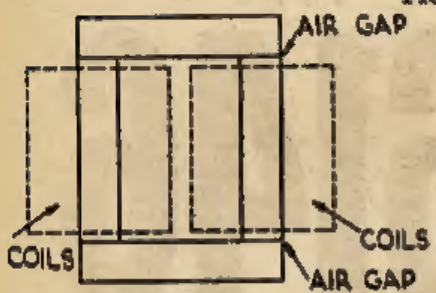


FIGURE 8.

formers, obviously the arrangement shown in Fig. 7 has the most merit. From an Amateur constructor's point of view, this type of construction lends itself to practical manufacture.

Fig. 8 shows a modulation transformer core built up of four "I" pieces of suitable length to suit the coils as wound. Note that the air gap is in four sections so that if we wish to obtain an air gap of 0.0144 inches [as calculated from formula (e)], each gap must be 0.0144 ÷ 4 = 0.0036 inches approximately.

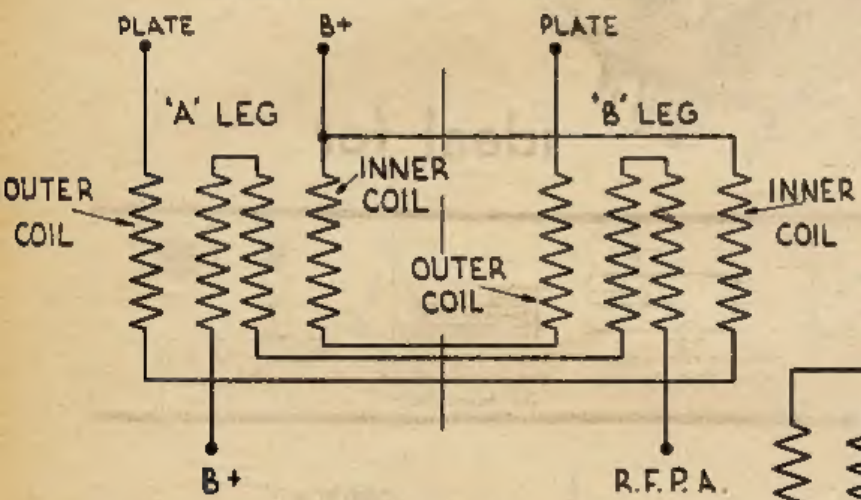


FIGURE 9.

Since all other values remain the same, we can now calculate from formula (k):—

$$\%X = \frac{3710 \times 18.05 \times 1.29 \times 50}{4 \times 21.3 \times 1.35 \times 50 \times 1000}$$

= 0.75% approximately.

Fig. 6 and Fig. 7 shows the mean diameter of the first primary to secondary space constant at 5 inches. In actual fact this dimension would become progressively smaller if we maintained the same clearance to the core. The reactance values shown for Fig. 6 and Fig. 7 would, therefore, be somewhat less than those shown.

From the point of view of reducing reactance to obtain a good high frequency response in modulation transformers, obviously the arrangement shown in Fig. 7 has the most merit. From an Amateur constructor's point of view, this type of construction lends itself to practical manufacture.

Fig. 8 shows a modulation transformer core built up of four "I" pieces of suitable length to suit the coils as wound. Note that the air gap is in four sections so that if we wish to obtain an air gap of 0.0144 inches [as calculated from formula (e)], each gap must be 0.0144 ÷ 4 = 0.0036 inches approximately.

The completed core must be tightly clamped together with non-magnetic clamps (brass, wood or bakelite, etc.)

It is a good idea to make a containing case of flat iron (galvanised will do nicely), nearly fill it with molten paraffin wax, then immerse the completed transformer in it. When the wax solidifies, you will have a transformer that is free from "talk back" and, at the same time, you will have a transformer that is repairable if you are unfortunate enough to have a winding or insulation failure.

There is just one further point in building a modulation transformer to this general arrangement, and that is, that the windings must be properly interleaved in the arrangement of connections. Fig. 9 shows the correct connections for all coils. The winding direction must, of course, be such that series connection is obtained in the coil groups. This arrangement ensures the same percentage resistance and reactance between each half of the primary (taken separately) to the secondary, and also a low value of leakage reactance between each half of the primary winding.

Fig. 10 shows a coil grouping arrangement which has a still lower leakage reactance between halves of the primary winding whilst at the same time having the other advantages claimed for Fig. 9.

CONCLUSION

The foregoing article represents the views of a Power Transformer Designer on modulation transformer problems. I have no doubt that there are better qualified Institute members on this subject.

Certain approximations have been used in order to simplify the approach to the problem. I hope that the article will be of some practical use to those keen types who like to build their own equipment.

I further hope that those of you who are using radio power transformers as modulation transformers will see the error of your ways! You cannot expect a high fidelity signal if your modulation transformer is not properly designed, irrespective of how good your microphone or amplifier equipment is. If you are happy with communication quality, OK, but if you want a high quality signal don't waste your time using an inferior modulation transformer.

If you don't feel like building one, buy the biggest and best transformer you can afford. The old adage about "good things coming in small parcels" **does not** apply to modulation transformers. If you have to decide between two commercially made units of about the same price, buy the **heavier** of the two units and you won't go far wrong.

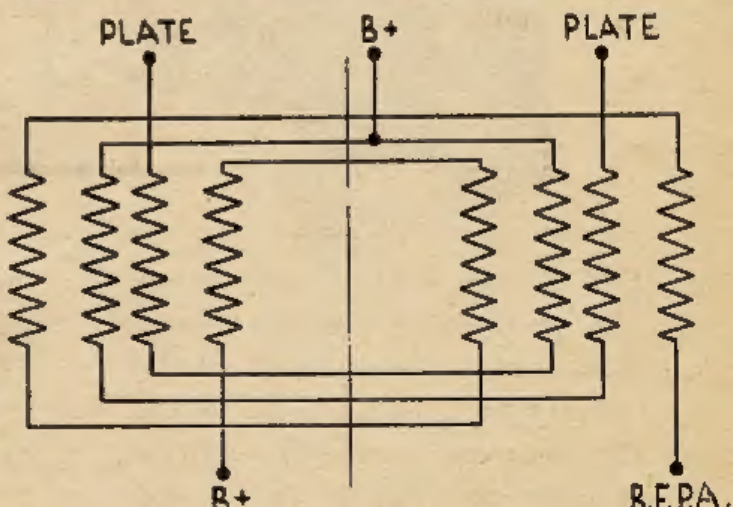


FIGURE 10.

Bandspreading the Super-Pro on all Bands

BY RON HENDERSON,* VK3ARV

ONE of the most popular receivers ever to grace the Amateur's table or rack-type layout is the Australian-made version of the Hammarlund Super-pro receiver, with which I think every Amateur and S.W.L. is familiar These receivers have been popular for many years now and give good service if treated properly and operated correctly. With the conclusion of hostilities, these receivers were released on the Melbourne market. Although only very few completed receivers were taken by the U.S. Army, plenty of bits and pieces were obtainable to build your own receiver if you so desired.

From a bare chassis the receiver was built up, coils wound, adjusted and finally calibrated. Many hours were spent at first enjoying the fruits of labour in listening to the new receiver, which looked like a first-class receiver at last to grace the shack table.

In those days we had the full span on the 7 Mc. band to listen to and somewhat crowded conditions of the Sunday morning dogpiles of QRM made tuning rather critical, owing to the capacity on the bandspread dial being larger than I thought would be necessary. After some thought, a scheme was evolved whereby full bandspread was possible on all bands including eighty metres. This was not built into the original design of the Super-pro and the following method is a delight to use on the crowded bands. With intelligent use of the crystal filter and phasing control, any signal can be copied with ease, on the extended bandspread system adopted.

Major alterations are not required, nor is the receiver taken apart for it is practically a wrecking job to remove the coil box from the chassis, not to mention the re-wiring job which would probably frighten most of you into turning over this page. All that is required is the removal of the two top plates over the bandspread tuning condensers as well as the main tuning condenser. It is necessary to use an extended tip on the soldering iron to reach the coil contacts.

First of all locate the small section of the bandspread gang that connects to the 15 to 30 Mc. coils, remove this connection and run an insulated wire, preferably 16 gauge, across the top of the coil-contact finger board and solder to the connection of the main tuning condenser on the contact board in that stage. Feeding the wire across the board is not hard with long nose pliers. This by-passes the switch and is a permanent connection. Repeat this operation on all stages—R.F., Mixer and Oscillator. With careful use of the soldering iron down past the main gangs no damage will result and you will find that this will not alter the range covered on the 28 Mc. band, nor the new band of 21 Mc. covered on the same coils. This connection will also be satisfactory for the 14 Mc band on the 10-20 Mc. coils.

Now remove the connection to the contact board of the 10-20 Mc. coils and repeat this operation on all stages as before, bandspread gang only, of course, then remove the connection to the 5-10 Mc. coils of the larger gang and solder this lead to the eighty metre coil range, 2.5-5 Mc. in other words. Move this connection along one solder lug, now connect the 10-30 Mc. gang to the 5-10 Mc. coils on all stages and you will find your task is completed.

Before replacing the two small top plates above the respective gangs, go over your connections and re-read this article if necessary.

Placing the bandspread dial on minimum capacity, make a run over the frequency of your receiver with an accurate signal generator, Bendix frequency meter or what have you, to see if the shifted wires have upset the calibration of the receiver on the 15-30 Mc band as well as the 10-20 Mc. band. Some slight touch up in calibration may be necessary on these two bands. If more than 500 Kc. out, something is wrong, but don't give in yet, you may still have room to move the trimmer on the high end of the band and the slug at the low end to put things in order again, if not, you have extra lead capacitance. You will probably find it is the lead from the small section of the bandspread gang which is connected to the main gang, that is the culprit. It should be spaced from the other wires on the switch by at least half an inch.

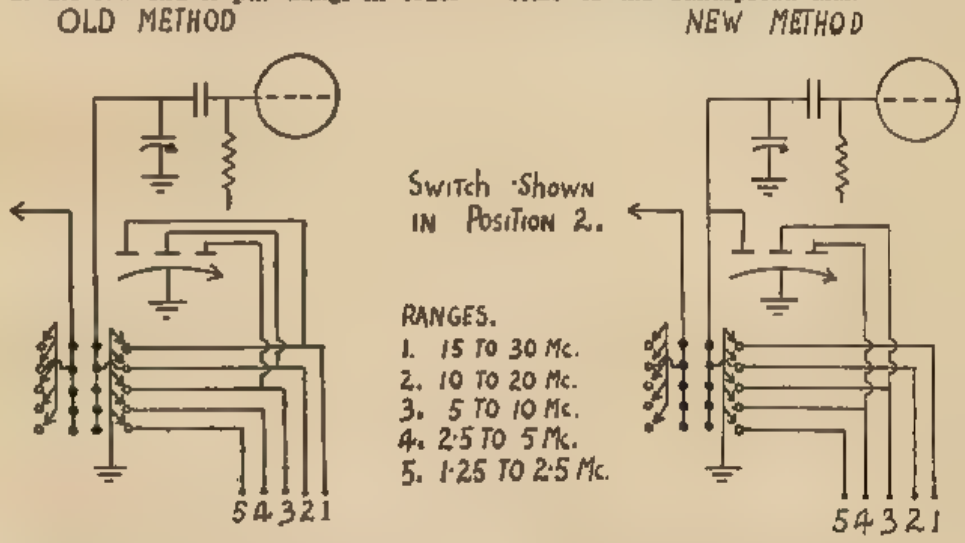
If you were as fussy as I was you will find that by using solid copper wire (insulated), for the oscillator stage, most of your frequency drift will have disappeared. The 5-10 Mc. coils will now need checking as we now have both the small sections of the gang in parallel across the coil and although not much difference in lead length is noticed, the change in position of these wires may upset the calibration just a small amount, but only a few hundred kilocycles at the most.

We now have less capacitance across the coil. This will increase the coverage on the required band, whether it be the broadcast or 7 Mc. band that is covered by this range of 5-10 Mc.

We now tackle the 2.5-5 Mc. range and with the bandspread dial still on minimum capacity as before, make a run over the range that is covered by these coils and check with your Signal Generator to see if the lead capacitance or inductance has made much difference to your calibration, although not much difference should be noticed on this band, and the trimmers and slugs can be touched up as before.

On the 3.5 Mc. band the main tuning condenser is set to 3.96 Mc. and it is now a pleasure to work other stations with the generous bandspread. Almost 90 divisions is used to cover this band, whereas previously you had no bandspread at all.

For those lucky chaps who work 7 Mc. phone DX, the main tuning condenser is set for 7.3 Mc. and you will now have at least 85 divisions to chase the elusive DX on this band. For the range of the 150 Kc. allotted to us for this band, 45 divisions will be available, more than ample for the average and certainly well worth the trouble. On the 14 Mc. band, use almost the full scale of the bandspread dial.



The writer will be pleased to answer any queries regarding this article if you will be good enough to include a stamped addressed envelope for reply. The writer has now almost finished his second Super-pro receiver in order to chase two signals at the one time, very handy for contest work. Many of these receivers have been serviced and the bandspread system altered as described, much to the satisfaction of everyone.

The circuit diagram included only shows one stage altered as given in the instructions, the same connections will, of course, be carried out on all four stages in the Super-pro.

For those people who listen on the broadcast band, 1.25 to 2.5 Mc., the bandspread dial will have to be placed on zero or minimum capacitance for the calibrations to read correctly because there is approximately 10 pF permenantly connected all the time.

* 18 Madden Grove, Burnley, E.1, Victoria.

Eighth Annual Urunga Convention

The Eighth Annual Urunga Convention will be held over Easter Week-end, 30th March-2nd April, and the organisers are looking forward to your support to make this the best Convention ever held at Urunga, or for that matter at any place!

V.h.f. enthusiasts will be interested in the two metre mobile and blindfold transmitter hunts, whilst the h.f. men can take part in the 40 metre battery-operated Gerry Challender Memorial Contest and the all-band scramble with phone from any place they can get it. Fishing enthusiasts and tall story tellers may even come up for prizes, too.

Accommodation is available at the Ocean View Hotel and several guest houses, whilst we can provide stretchers under shelter for those who wish to fend for themselves.

Accurate tariff figures are not available at the moment, but last year the hotel was 35/6 per day, the guest houses 25/- per day with cheaper rates per week.

You are strongly recommended to book your accommodation now by writing to VK2AHH at Kempsey, stating type of accommodation, number of persons, date and time of arrival and departure, and enclose £1 deposit per person.

The area is served by train, whilst arrangements can be made to pick you up at Coffs Harbour if you elect to come by plane.

Our Sunday night concert is of the highest standard and the pleasure of meeting your old cobbers and making new friends are two further attractions to bring you to Urunga.

SO DON'T FORGET URUNGA.
MARCH 30 TO APRIL 2.

—N. A. Hanson, Nth. Coast Zone Officer.

— . . . —

50 Mc. W.A.S.

Call	Cer. No.	Add. Cntr.	Call	Cer. No.	Add. Cntr.
VK2WJ	13	4	VK2AEZ	10	1
VK3PG	8	3	VK3XA	11	1
VK2VW	9	3	VK3GM	13	1
VK4RY	3	2	VK3ACL	14	1
VK6HR	4	2	VK2ZD	16	1
VK5LC	1	1	VK2HO	17	1
VK8DW	3	1	VK2ABC	8	
VK3RR	6	1	VK2WH	15	
VK3HT	7	1			

BOOK REVIEW

"INTRODUCTION TO T.V. SERVICING"

By H. L. Swaluw and J. v'd.' Weerd

With the advent of t.v. in this country in the very near future, the addition to the Philips Technical Library of a comprehensive volume on t.v. servicing is very welcome.

This book has been written especially for those radio servicemen who, having a sound knowledge of circuit fundamentals, wish to prepare themselves for t.v. servicing.

Several chapters are devoted to the theoretical explanation of scanning, the operation of the picture tube and the wave form of the actual t.v signal. Next comes a detailed description of a modern t.v. receiver, and to aid the discussion the entire circuit diagram is included. Such problems as antenna matching and r.f. amplifier design are fully covered.

A description of various types of portable test instruments is given, including a pattern generator and t.v. signal tracer.

The final one hundred pages are devoted to a series of illustrations, showing the picture as it appears when the receiver is incorrectly adjusted, or some component part is faulty. Each is shown with firstly the test pattern from the t.v. station and then as it appears using a t.v. pattern generator as the signal source.

This book should be a very welcome addition to any Amateur or Serviceman's book shelf.

There are 264 pages, 6" x 8½", cloth bound.

Our copy by courtesy of Philips Electrical Industries (Aust.) Pty. Ltd. Price in Australia is 40/-.

Further Notes on the Transmitter with Low Harmonic Output

BY H. F. RUCKERT,* VK2AOU

This series of articles have created some interest among members and the author would like to give further information in reply to the many questions received.

We have to start, unfortunately, with the correction of a few errors:

(1) The four-range switch under the v.f.o. (October "A.R.," page 2) is used to switch the filaments of the multiplier stages off which are not in use. It actually would not matter if they were on all the time. The different resistors in the plate, screen and cathode circuits of these stages limit the current enough not to cause damage when the v.f.o. is not delivering r.f. The same applies to the 807 driver.

(2) The five links, coupling to the tuned grid circuits of the driver 807, should not be connected to the cold ends of the grid tuned circuits. They are directly grounded. The tuned circuits are by-passed at their common cold end with a 0.01 uF. to ground. The 25,000 ohms grid leak resistor must not be shorted out (Oct. "A.R.," page 3).

(3) The upper link of the 807 plate multiband circuit should be grounded in a similar way to the lower link. The centre lead must not be grounded.

V.F.O. NETTING

VK2AHH, being an excellent observer, caught the author by saying: "How can a shielded v.f.o. give a beat note in a receiver when the p.a. or doublers are not working?"

The answer: The transmitter is not as well shielded as a signal generator should be. The receiver is next to the transmitter and is connected to the transmitter at the antenna relay and the stand-by relay, and uses also the same mains line. The v.f.o. gives only a S5 signal in the receiver, whilst a grid dip meter gives S9 plus 40 db. (no aerial); the BC221 gives S9 (no aerial).

The second station receiver's first oscillator gives S9 plus 25 db., therefore the shielding of the transmitter is not so bad after all, and t.v.i. cannot be expected.

The three circuit band-filter at the grid of the driver was the best way to prevent long leads with high impedance and high r.f. voltage going to the driver from the different multipliers. We also prevent, in this way, detuning of multiplier circuits because they are not switched on to different leads and valves with different capacities.

The two ranges of the v.f.o. work like this: The whole 3.5 and 28 Mc. bands can be tuned with the 25 pF. air capacitor by shorting out the 25 pF. fixed capacitor and leaving open the contact to the 12 pF. capacitor. The narrow bands like 7, 14, 21 Mc. and the c.w. part of 3.5 and 28 Mc. can be spread over the dial by putting the 25 pF. fixed capacitor in series with the air condenser and the same starting frequency—just below 1750 Kc.—is achieved by switching the 12 pF. capacitor parallel to all the capacitors.

* 25 Berrille Road, Beverly Hills, N.S.W.

ABSORPTION TYPE FREQUENCY METER

Nov. "A.R.," page 3, 2nd column, 5th para.: It was said that a sensitive absorption type frequency meter did not indicate any harmonics at the driver or p.a. stage. Unfortunately it remains to be discussed what is a very sensitive frequency meter of this kind? An examination of the matter had the following result:

Using two different industrial manufactured absorption type frequency meters (0.1 to 60 Mc. and 20 to 220 Mc.), which were not shielded, resulted in overloading of the other components with power from the fundamental, and the harmonics are not indicated. The frequency meter the author built himself has a sensitivity of 4 to 40 mV. link coupled from a calibrated signal generator with the 70 ohm co-ax cable, depending on the L/C ratio of the frequency meter (more sensitive with low capacity at the high frequency end of the ranges) for one scale division deflection of the 40 uA. meter. With this meter we could detect the harmonics of the multipliers, driver and p.a. stages, and also the second harmonic of the g.d. meter and receiver oscillators.

What does this mean? If we have, for example, 800v. d.c. at the plate of the p.a., we may get 500v. r.m.s. r.f. at the tank circuit. If our absorption frequency meter reads full scale one inch away from the tank or antenna coupler circuit at any harmonic frequency, we know that we have about a few volts of harmonic energy in these circuits. This is far too much for the international required harmonic suppression of 60 db. (1 : 1000).

It will not be easy to do much about this at the p.a tank or at earlier stages. We must prevent any direct radiation from these stages by shielding and filtering out-going leads. But at the antenna coupler circuit we should only get a few mV. of the second harmonic (fundamental : harmonic = 10,000 : 1). Of course there should be nothing after the 50 to 70 ohm impedance low-pass filter at frequencies above 41 Mc., as far as the possibility of checking of harmonics with this frequency meter is concerned (fundamental : harmonics = 50 volts : u-volts). The remaining harmonics should not cause t.v.i. if the t.v. receiver is within a 15-mile radius of the t.v. transmitter and not behind a steep cliff shielding the t.v. signal from getting to it.

At the tank of the p.a. we can find very weak 14 Mc. harmonics up to the 15th at about 213 Mc. with this frequency meter.

CONSTRUCTION OF ABSORPTION FREQUENCY METER

A small 50 to 100 uA. meter is satisfactory. All components must be placed in a shielded box of 2" x 3" x 5" for example. Only one coil end is insulated and the coil is plugged in outside. A good Ge diode should be used. Valves are far less sensitive and not satisfactory without an amplifier. The coupling between the tuned circuit and the rectifier,

(Continued on Page 12)

COIL TABLE FOR VK2AOU TRANSMITTER (see "A.R." for Oct. and Nov., '55)

Stages Mc.	Diam. inches	Length inches	Turns	Remarks
V.F.O. 1.75 Mc.	1.38	1.9	80	On ceramic tube.
Driver Tank Multi-band 3.3 to 32 Mc.	1.38	1.1	10	4 turn link.
	1.38	2.24	23	6 turn link.
P.A. Grid Circuit Multi-Band 3.3 to 32 Mc.	0.98	1.42	23	5 turn link.
	0.71	1.34	20	4 turn link.
P.A. Tank, Pi-Network 28 Mc.	1.38	1.77	5	¼ inch diam. tubing.
One coil with tap for 21 Mc. — 14 Mc.	2.3	1.54	6	¼ inch diam tubing.
One coil with tap for 7 Mc. — 21 Mc.	2.3	0.79	2½	
One coil with tap for 7 Mc. — 3.5 Mc.	2.77	3.16	15	⅛ inch diam. wire.
	2.77	1.78	8	
Antenna Coupler Multi-Band 3.5 to 30 Mc.	2.36	4.5	21	⅛ inch diam. wire. With taps for 'scope and feeders at 2 to 8 turns. 2 + 2 turn link in the middle.
	1.78	3.0	15	⅛ inch diam. wire. 100 pF. air cap in the middle.
R.F.C. at P.A. Tank	0.79	2.37	90	Not critical, close wound. Has no resonance holes between 3.5 and 30 Mc.

Band Pass Coils: 13 mm. diam., 1 to 2 cm. long. (Short 6 mm. diam. slug for 14-28 Mc., long 10 mm. diam. slug for 3.5-7 Mc.).

Air Coils ⅛ inch diam. may be used and calculated from graph and formulae given in "A.R.," November, 1955, T.v.i. Filter article. Use calibrated grip dip meter for aligning.

QRP T/R Switching for 144 and 288 Mc. Antennae

BY PHIL WILLIAMS,* VK5ZAD

The method of switching, which is described here in its simplest form, lends itself to transmitters of the 10-20 watt class, such as the 522 on 2 mx or the push-pull 7193s on 1 metre. Most suitable relays for transmit/receive facilities are quite expensive, or introduce considerable impedance irregularity in the transmission line on either transmit or receive position—sometimes both.

The only apparatus needed in this method is a 4 x 2 oak switch (mine was obtained from an English I.F.F. set) and two additional quarter wave sections of the transmission line you happen to be using. Two switch contacts are used to short these stubs while transmitting and open them while receiving, the third controls receiver h.t., and the fourth the transmitter h.t.

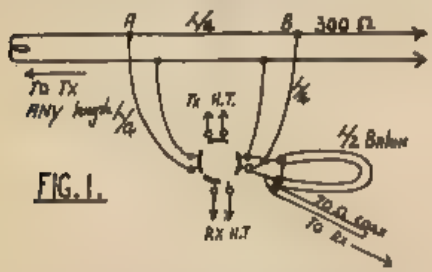


FIG. 1.

Fig. 1.—T/R switch shown in transmit position.

It will be noticed that in Fig. 1, which is drawn for the transmit position, the line from the transmitter to the aerial is direct, and only has two shorted quarter wave stubs connected to it at A and B. They do not adversely affect transmission. The balun to the receiver is shorted so that the leakage to the receiver is quite small, in fact it is less than the capacitive leakage from an open relay contact. It is advisable, nevertheless to include a grid leak in the first stage of the receiver to bias it off while transmitting.

On switching to the receive position (shown in Fig. 2), the switch at D allows signal from the antenna to pass along the stub BD to the receiver balun and co-axial cable to the receiver input tuned circuit (not shown). The two quarter wave sections BA and AC now form a half wave line having high impedance at B and C, with the transmitter connected to the low impedance point at A. The transmitter impedance at A may be anything at all while the h.t. is not applied, and therefore connecting it to the half wave line at A effectively isolates it from the receiver circuits so that it does not affect the matching.

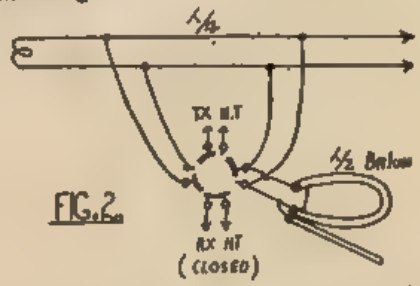


FIG. 2.

Fig. 2.—T/R switch shown in receive position.

No adjustments are required on the T/R switch itself. Simply switch to transmit and adjust the coupling and tuning for the required output conditions, then switch to receive and adjust your receiver input for best results—either max. signal or optimium noise figure if you're fussy.

Don't forget to apply the velocity correction factor to the quarter wave line sections, and the half wave balun if you use one. On 144.5 Mc. a quarter wavelength of open wire is 20 inches long, 300 ohm ribbon is 16¾ inches long, and polythylene co-axial cable is 13½ inches long. The balun is, therefore, 27 inches long. You may simply halve these for 288 Mc. Measure the stub lengths from the switch contacts, not the switch terminals—particularly at 288 Mc.

This scheme may be used with co-axial cable throughout, in which case the balun is, obviously, not required and switch D shorts the receiver co-ax line a quarter wave from the tapping point at B.

Somebody may like to adapt this method of switching to 5 or 10 metres, with lumped circuit elements replacing the quarter wave stubs.

* 42 Harrow Road, Somerton Park, S.A.

TABLETOP TRANSMITTER

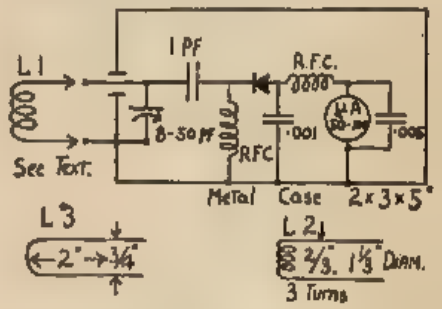
Next month VK2YY's transmitter will be featured. This consists of a Geloso v.f.o., 6146 (or 807) p.a., and 6L6 modulators. The complete phone and c.w. transmitter (including power supplies) is built on one chassis. The article will be illustrated with photographs.

TRANSMITTER WITH LOW HARMONIC OUTPUT

(Continued from Page 11)

etc., must not be too tight and 1 pF. bead type ceramic capacitor is recommended.

The two r.f. chokes are wound on any ½ watt high ohm (100,000 ohms to 1 megohm) carbon resistor serving as a former only, with about 30 to 40 turns.



The calibration can be done with a good g.d. meter and a calibrated receiver for checking. The higher frequencies may be checked with a parallel wire Lecher system using the g.d. meter as rf. generator. By using an 8-50 pF. air capacitor, the ranges 16-38, 36-92, and 85-235 Mc. can be covered. Coil L1 has six turns, and is slug tuned. The others are wound to dimensions given.

ANTI T.V.I. FILTERS FOR THE AMATEUR TRANSMITTER

An error appeared in this article in Nov. "A.R." on page 10 at the top of column three. The factor "m" is always smaller than 1, therefore the notations to the formula should read: "m = values between 0.6 and 0.8 (often used). In our example m = 0.65."

On page 11, first column, tenth and eleventh lines should read: "and m near 0.65."

A Mobile Transmitter and Antenna

BY R. S. FISHER,* VK3OM

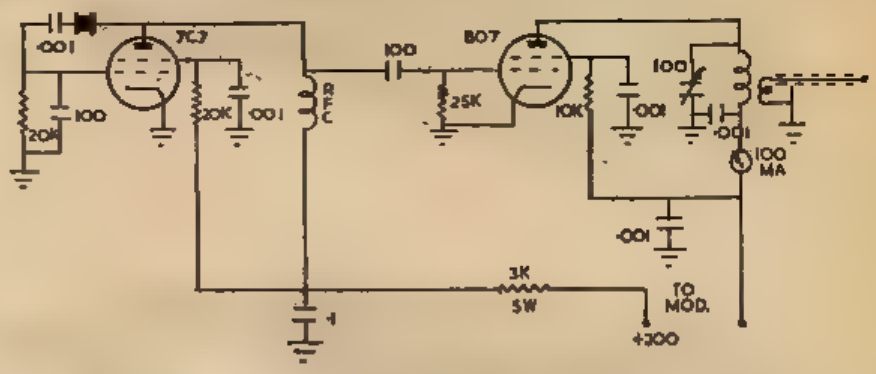
The transmitter and antenna to be described are used by the writer as companion pieces to the crystal controlled mobile converter previously outlined.[1] The combination has given excellent results over the last 12 months.

THE TRANSMITTER

The transmitter operates as a medium power crystal controlled unit on the 80, 40, and 20 metre bands. It features 15 watt input, ample plate and screen modulation and provision for crystal or dynamic microphone input. With the final amplifier running 15 watts input, the entire unit draws 14 amps from a 6 volt battery. This is well within the capabilities of the average car's electrical system.

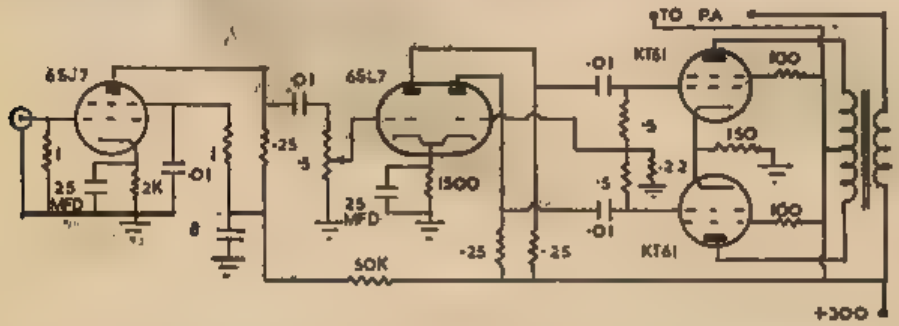
The r.f. section of the transmitter uses a 7C7 Pierce oscillator driving an 807 or 2E26 in the final. This gives plenty of drive for the final with either 40 or 80 metre crystals. For 20 metre operation it is necessary to double in the final amplifier. This does reduce the efficiency slightly, but as it simplifies the tuning considerably, it was considered worthwhile. Some adjustment of oscillator output can be had by either increasing or decreasing the value of the h.t. dropping resistor. The circuit specifies a 3,000 ohm resistor which should give about 3 milliamps. drive. The final is quite straight-forward in design. It uses plug-in coils to change to the various bands. With a 1¼ inch diameter former, wind on 10 turns for 20 metres, 20 turns for 40 metres, and 35 turns for 80 metres. The plate tuning condenser can be an ordinary close-spaced receiving type.

The modulator is designed to have ample gain for any crystal or high impedance dynamic microphone. A 6SJ7 or 6AU6 preamp. drives a 6SL7 or 7F7 paraphase inverter, which in turn drives a pair of KT61 in Class AB1. These tubes were used in preference to 6V6s as they take less plate current. As it is they are slightly over biased and the pair draws about 60 milliamps. Some care should be used in the layout of the modulator to avoid r.f. feed-back. This is especially important with the 6SJ7 stage. Return all earth leads of this stage to a common point and then experiment for the best earthing position.



MOBILE TRANSMITTER R.F. SECTION

The modulation transformer in the original transmitter consisted of two speaker transformers back to back. The first a 10,000 ohms c.t. to 2.3 ohms, the second 2.3 ohms to 5,000 ohms. Providing medium sized transformers are used, this works very well. However, if it is possible to obtain a small modulation transformer, so much the better. The writer now uses an SCR522 modulation transformer.



MOBILE TRANSMITTER MODULATOR

The power supply uses two transformers and two vibrators. As shown in the circuit, they are wired as two separate supplies, and their input and output are connected in parallel. The transformers are rated at 300 volts 75 milliamps. These are standard items and easily obtained. The vibrators are 6 volt standard synchronous units. The low tension chokes consist of 15 turns of 18 gauge wire wound on a lead pencil. These are self supporting. The high tension chokes are ordinary 2.5 mH. r.f. chokes.

Two relays are needed to control the transmitter. One is connected in the main low voltage line from the battery, the second by the power supply to switch the vibrators on. This relay becomes the transmitter control.

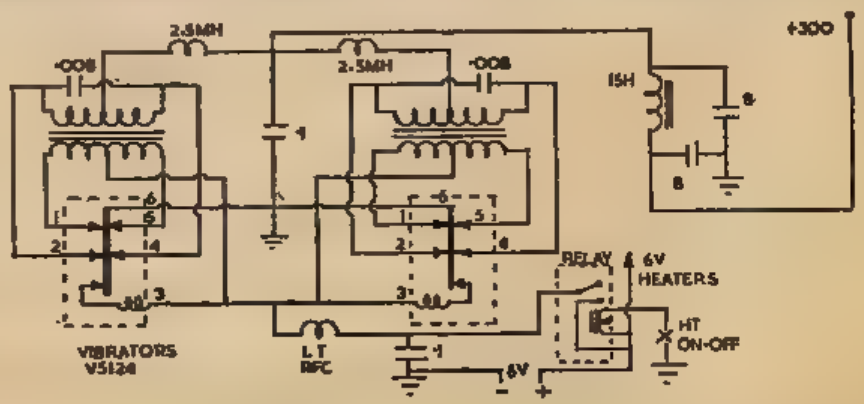
Low voltage relays are easily obtained from motor accessory suppliers in the form of head lamp and horn relays. These will easily handle the current involved.

The best position to mount the transmitter depends on the type of car and the available space. Some positions worth considering are the luggage boot, under the dash, in the glove box, under the front seat (usually plenty of room here) and on the bulkhead.

The transmitter and power supply can be easily constructed on an 8 inch by 10 inch chassis. The writer has constructed his in a medium-sized amplifier cabinet. This makes a neat unit that takes up little space.

THE ANTENNA

A mobile installation depends on its antenna. No matter how good the transmitter may be, it will be useless unless the antenna is doing its job. This, of course, applies to all types of stations, but more particularly to the mobile station. As we must work under diffi-



MOBILE TRANSMITTER VIBRATOR SUPPLY

* 81 Neerim Road, Glenhuntly, S.E.9, Victoria.

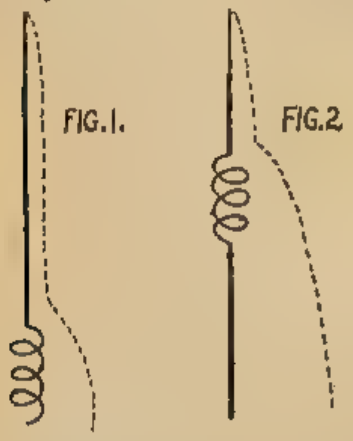
1—"A.R.," September, 1955.

cult conditions with a short antenna of relatively low efficiency, it is essential that we use every watt of power in the best possible way.

The design of the mobile antenna is often looked upon as being the most exacting part of putting together a complete mobile set-up. In actual fact, its construction is probably the easiest part of the whole thing.

DESIGN FACTORS

Let us start with a description of just how a short whip antenna works on the lower frequencies. Its operation is, of course, based on a quarter wavelength antenna working against ground, the ground in this case being the car body. On ten and fifteen metres this can be done, as a quarter wave on these bands is eight and twelve feet; it is possible to feed a whip of this length with fifty ohm co-ax as it stands.



As the frequency is lowered it becomes impractical to put an antenna of the required length on a car and if we continue to use our ten or fifteen metre whip a considerable amount of negative reactance will appear. On forty metres this amounts to 1,200 ohms. It is therefore necessary to add enough positive reactance to cancel this out, in other words we must tune our whip to the required frequency. To do this a loading coil is added to the whip, and tuned until the inductance is just enough to cancel out the negative reactance.

An important point is the placement of this inductance as it will effect the radiation resistance of the antenna to a great extent. With the loading coil at the base of the antenna, the radiation resistance will be approximately 4 ohms. With the coil in the centre, this is raised to about 10 ohms, and as a higher radiation resistance will give higher efficiency, the centre position is to be preferred. Top loading will give even higher efficiency, but this may be mechanically difficult to achieve.

See Figs. 1 and 2 for the current distribution on a bottom and centre loaded whip antenna. As the centre loaded antenna has more current flowing in it, it follows that this will have a higher field strength than the one with bottom loading.

The feeding of whip antennae will be covered in the following paragraphs.

CONSTRUCTION DETAILS

Now for details of an 8-foot centre loaded antenna for use on the 40 metre band. It is designed to have very low loss. The centre coil former is constructed from a piece of tubular polystyrene 1¼ inches in diameter and about 4 inches long. Firstly, drill the ends as shown in Fig. 3. Sizes have been omitted as the diameter of disposals whips seems to vary quite an appreciable amount.

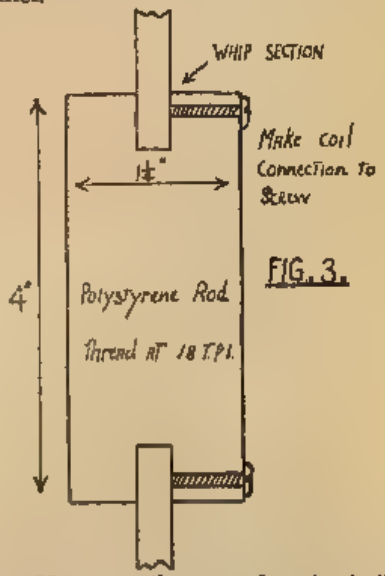
Next tap in the holding screws. This is best done by drilling a hole slightly under the size of the screw to be used. Then force the screw in, heating it every so often with a soldering iron.

When this is done, the thread for the winding can be cut in. This job must be done on a lathe of course, and it is best to have the other holes drilled at the same time, to ensure that they are all straight.

The coil is wound with 18 gauge tinned copper wire. About 52 turns at 18 turns per inch will be needed, the exact size must be determined by experiment, with the following procedure.

Fix the whip in place on the car and connect to transmitter through a length of 50 ohm co-ax cable. If the length of cable needed exceeds about six feet, it will be advisable to connect two pieces in parallel. Make sure that the co-ax is properly earthed at both ends. Couple the co-ax to the final tank coil of the transmitter with a two-turn link. Turn the transmitter on and note the loading. This must be done with the boot lid of the car down as far as possible.

Next, connect a length of stiff wire around the whip at the top of the coil and tapping it down a turn at a time until maximum loading is reached. Remove the number of turns shorted out and the job is done. To weatherproof the coil, give it one coat of clear enamel.



For 80 metres the procedure is similar except that approximately twice the number of turns will be required on the coil. It would be possible to construct an antenna which would cover both 40 and 80 metres by arranging a tap on the coil for 40 metre operation.

Trail of wreckage left by the 1955 Maitland flood.

Aborigines were Wiser than the Whites

Aborigines were wiser than their white counterparts when it came to settlement in the Hunter River Valley district of New South Wales.

They kept to the surrounding hills — safe from the avalanche of water which they knew could bring sudden death and disaster.

Early in 1955, the worst flood in the history of the white man in Australia swept through the valley, causing privation and misery to thousands of people.

It also cut every form of communication. More than 10,000 subscribers' services and 400 trunk lines and telegraph channels were cut off and it was estimated that the repair bill would total more than £500,000.

Safeguard for The Future. It was a costly lesson, but today science has found a way to reduce this sort of flood damage to a minimum.

A new resin* which permanently seals telephone terminal boxes in a solid waterproof block is being used by the Postmaster Géneral's Department on its services throughout Australia.

SHELL scientists derived this resin from mineral oil to give communications the most effective waterproofing agent yet developed.

**Epikote Resin*

DX ACTIVITY BY VK3AHH†

PROPAGATION REPORT

3.5 Mc.: During the month, conditions were not as reliable as they used to be. However, some DX can be reported. Times were for North America 1100-1300z, and for Europe: 1500-1800z.

7 Mc. This band displayed the usual openings to all continents, although some deterioration has to be mentioned. The American continents and the Far East were represented between 0600z and 1400z. Openings to Europe and Africa occurred around 1200-2000z, and 0700-0830z.

14 Mc. Band conditions were reasonable to all continents. Nevertheless, openings appeared to be somewhat unreliable as far as quality and times were concerned. Best periods were for the American continents, 0600-2300z, for Africa and Europe: 0700-2100z.

21 Mc.: This band showed openings to all continents. The American continents were workable between 2100 and 0400z, while Europe, South East Asia, and Africa were represented between 0700z and 1400z.

27/28 Mc., These bands allowed some contacts with North America and the Pacific Islands around 2300-0400z.

NEWS AND NOTES

Touring round this old globe, Danny **VP2VB/P**, has now been operating as **FO8AN** for some weeks, and expects to leave for **VR1** (**British Phoenix**) possibly on 15th March (from W6YY).

Doug **VK1IJ** did not waste much time with getting used to the somewhat cooler QTH, and has been one of the most consistent stations on the 14 Mc. band. His and VK3YS' efforts to establish 50 Mc. contact between **Macquarie Island** and the mainland are highly commendable. Keep up the good work!

VR3B and **VR3C** keep **Fanning Island** on the Amateur Radio map after Ray **VR3A** has left. (from W6YY).

It looks as if we are getting some competition from the 50 Mc. boys after all!! **VK4NG** worked **JA1AHS** on 50 Mc. Congrats! (Thanks 3YS for info.)

Another report on commercials on 7 Mc. has been received from **3AWS**. Thank you!

Would you like to work **Italian Somaliland**? **I5AAW** is active on 14165 Kc. on c.w. (from W6YY).

Some **VQ9** activity can be expected. (from 3ATN).

The good old 80 mx band is in the news again! **FA8DA** is looking for VKs between 1600 and 1800z on Saturdays and Sundays.

Another call sign has been issued for **Macquarie Island**: Dick **VK1RD** (from 1IJ).

QTHs OF INTEREST

(from 2QL, 4SE, 5WO, 7LZ, BERS195 and Rod de Balfour)

I5AAW—Carlo Bortoloni, Box 85, Mogadiscio, Italian Somaliland.
OQ5PE—Box 40, Kindu, Belgian-Congo.
I1BLF/Trieste—Box 50, Reist, Trieste.
CR8CV Box 3070, Luando, Angola.
YA1AM—Via R.S.G.B. or A.R.R.L.
HL9AA—Alpine Club, Seoul Engineering College, Seoul, Korea.
AP2M—110 Multi St., Karachi, Pakistan.
VP1EK—"The Doctor" Cayo, British Honduras.
SU1AS—P.O. Box 2034, Cairo, Egypt.
HP1EH—P.O. Box 189, Panama City, Panama.
HZ1AEH—S.F.C. Wm E. Brester, R.A. 142964, 8688th D.V., U.S. Army Section, A.P.O. 615, New York, U.S.A.
PZ1BS—A. N. Soeperman, Box 848, Paramaribo, Surinam.
VP8AL—A. F. Lewis, C/o. Postmaster, Port Stanley, Falklands.
VS9AS—Box 1245, Aden.
KM6AX—Navy 3080, Box 19, F.P.O., San Francisco, U.S.A.
HZ1AB—A.P.O. 615, New York, U.S.A.

† Hans J. Albrecht, 10 Balgravia Ave., Box Hill North, E.12, Vic.
* Call signs and prefixes worked.
z — zero time—G.M.T.

ACTIVITIES

3.5 Mc.: Frank 2QL heard G, OZ, DL, ON, followed by Fred 3YS who worked VK9XK*. 2AHH adds Ws.

7 Mc.: 2QL heads the list with VQ6LQ*, ET2AB* and Europeans. The next in line is Laurie 2AMB with VS1BJ*, KL7AZS*, DU7SV*, VQ4AQ* and ZD6RM. Dave 2ADW keyed with VQ4AQ* and JA*. Tim 3AZY adds VE* and JA*. Eric BERS195 heard Europeans, JAs, VQ4CC, YU1EMN. Dave Jenkin heard Europeans, DU7SV, KL7AZS, JAs, YV1AD. 2AHH worked JA*.

14 Mc. C.w. Doug 1IJ 4X4BX*, KA/JA*, LU3EX* 2QL. FY7YE*, FY7YF*, VP5DC*, VQ8AG*, FB8ZZ*, CR7CI*, ST2AR*, ZE8JZ*, ET2LB*, EA8BF OQ5BT*, OQ5PE* 3V8AN*, ET3LF* MD5UK*, MP4QAL*, CN2AZ*, CR6-CV*, YA1AM*, I1BLF/Trieste*, HL9AA*, HK4-BD*, VP6UN*, PZ1BS*, and VP4TR, KT1EXO, HH3L, ET2AG, ZS7C, SV0WU, SV0WL, HP1EH, HL2AA I5AAW, FG7XB. 2AMB: VQ4AQ*, VQ4FQ*, ZD6BX*, TI2PZ*, ZE2JC*, VQ6LQ*, 4S7MR*, ZS6AJX*, FB8RR*, FB8BS*, KP4OB*, VS2DW*, Europeans*, YV5FV*, LU2MC* FB8-ZZ*, VU*, FY7YE*, CE3DZ*, and CO7AH, CO3YP 3W8AA, FO8AD, 4X4BT, ZS1BK ZE6-JX, DU, 4S7NG, CR9AI, VS1GY, VS6CW, LU2-RD, YV5BJ, ZE6JY, YI2AM. Ken 5KR. YI2AM*, VP8BM*, LU5ABL*, VK1AWI*, ZS3ND*, KA/

"Please QRX a sec. OM! I think I can smell a resistor burning."

JA*, YV5DE*, 4S7KH*, Europeans* Stan 3TB: CE3ER* CX2AM*, FA8DA*, FA8RJ*, LU6ZB*, VP5DG*, VP6LN*, VQ4DT*, 3V8AN* 3V8FA*, Europeans* Ivor 3XB. OQ5PE*, TI2PZ*, YV5-AE* SV0WL*, VP6PJ*, Europeans* 3V8 FK8*, YN1PM* (0910z) Lance 5ZA ZC4IP*, ZD6-BX*, VS1BJ*, VQ4AQ*, PY2ANV*, ST2NG*, 4S7BW*, 4S7PT*, KZ5KA*, JAs*, VE* Europeans* and FO8AY, CR5JB. YJ1AA, FU8AA, HZ1AB, ET2PA, AP2M, VQ8CB, KG4AO, 3W8AA. 3ADW OD5LJ*, ZC4IP*, VS1*, VS6*, Europeans* VQ4AQ*, MP4BBE*, 4S7*. Ron 8ARV: VQ6LQ* VQ3CF*, 4S7NG*, 4S7AM*, ZC4IP*, KP4JE*, VQ4FM*, 4S7PT*, 4S7MR*, ZS1JA* ZS5ND*, ZS1BK* ZS2X*, LU3EQ*, HC1LE* TI2MAR*, CO2EM*, VP9BM*, CE3-DZ*, XE1MB*, KV4*, FB8BS* FB8ZZ* VS1*, VU*, MD5UK*, ZD6BX*, ZE2JC*, OD5AV*, JAs* Europeans* 3AZY FO8AN* VU*, ZS4-GF*, KA/JA*, Europeans*, Bob 4ZW FY7YF*, YJ1DL*, FB9BR* ZS6AP*, Europeans* Syd. 4SE: TI2PZ*. ET3LF*, VP6DG*, VS1*, JA*, 5A2TG*, FY7YF*, KV4*, CO2OM* ZS4MG*, ZS5OD*, ZS6*, VQ4FK*, OQ5PE*, 4X4RE*, SV0WL*, VE* ZS2X* YV5FV*, YJ1DL* VS9-AS*, MP4QAL* VS4NW* HL9AA*, LU3MC*, LU7*, LU5*, VS2*, FB5BR*, 4S7KH*, ST2NG*, AP2M*, VS6*, Europeans* and HC1XD, FD4BD VQ8CB, CM9AA, KZ5GH 4X4FQ FB8BS. CN2-AN, HC4MK, YA1AM YI2AM. ET2PA. ZE2JD, VP7NS. XZ2OM CX1BZ. FO8AB. CN8MM FA8-IH, HS1VR, HK3FN, VP5YG 3W8AA. KP4AC, PJ5AN, ZD3A. Doug 5BY: VP7NG* (regular sked) John 5HI: YV5AE* KP4WW*, VP9BM*, CR7IZ*, FA8AN*, ET3LF*, VS4NW*. Joe 5JD: CN8NM*, VE*, Europeans* Reg 5QE ZD6BX*, OQ5BT*, FQ8AY* YA1AM*, AC5PN*, VQ8AB*, ZB3GZB*, MD5UK*, FO8AN*, ZC5SF*, 3W8-AA*, FB8XX*, VQ6LQ*, VP8BD* Ray 5BK VS1*, KA*, Europeans* George 5RX MP4QAL*, IT1ZGY* SV0FY*. (The above VK5 reports were forwarded by 5RK, thank you Ray!) Austin 6WO: FB8BS*, FY7YF*, YV1AD* Col 7LZ ZC4IP*, ZC4VP*, VU*, I1BLF/Trieste*, VP7NG*, YJ1DL*, YV1AD*, PJ2AA*, 4X4DH*, MP4QAL*, MP4BAU*, Europeans* BERS195: AP2M, CN8MM, CR9AI, DU, FA8IH, FK8, I5-AAW, JA, KT1EXO, MP4QAL, ST2NG, VQ6LQ, VQ8CB, VS1, VS2, VS6, VU, YJ1DL, YV5AE, ZS2BC, 3W8AA, 4S7MG, 4X4DK, Europeans. Dave Jenkin: DN, 3W8AA, JA, CR8AE, KV4, VS2, 4S7NX, OA4J, PJ2AA, 4S7BW, Europeans. 2AHH VK1EM*, FA8DA*, Europeans*.

14 Mc. Phone: 1IJ: DU*, KA/JA*, 4X4DK*, Europeans* 2AMB. VP2DA*, VP2DC*, VP7-NS*, HP1EH*, YS1MS*, FO8AN*, HP3FL*, and FO8AB. FO8AD, ZP4GC, XE2NT KZ5CS, KT1-WX, 1H2JK, TI2LDT, HZ1TA, ZS6CY, ZS6NE, CR7AH VS1, VS6, CO5LF, ET2US, YI2AM, HP1CC, OA4AW, Europeans. 5KR KA*, VU*, CE3PV*, YV5AB* 3ADW KP4WD*. Ray 5ATN: VR5AC* HL9AA*, EA8AR* 5AZY MP4KAB*, MP4BBW*, ST2DB*, HP3FL*, CN8MM*, ZE3-KR* ZS8*, Europeans*, XZ2AD*, ET2IC*, 4X4-DK*, 4X4GS*, HZ1TA*, YV5HS*, VP2DA*, VS5AT*, VS1*, VS2*, TI3LA*, YI2AM*, TG9AL*, HZ1AB*, KP4ADX*, HK4DP* 4ZW VQ2NA*, ZS6CF*, ZM6AT*, Europeans* 5HI: ZS1BB*, ZS8*, YV5BQ*, CR7CS*, HP1CC*, KZ5IF*. 5WO VQ8FS*, ST2DB*, I5AAW*, CR7CZ*, VQ2ST*, ZE2JJ*, ZS8*, HZ1TA*, SU1AS*, I5I-EHM*, VP1EK*, HP3FL*, ZP5CG*, YV5DL*, VP2DC*, YV3BD*, LU3EB*, ZK1BL*, TG9AD*, CO2BL*, Europeans* 7LZ OD5AB*, HP1EH*, VU*, HZ1TA*, YV5BS*, 4S7SR*, TG9AL*, AP2U*, HK3PV* Pat 7PM KA*, HP1CC*, ET2MZ*, ST2DB*, XE2KW*, TI3LA*, VP2DC*, HK3FV*, YV5DL*, TG9TU*, YI2AM*, YS1MS*, CO2GU*, CO2CT* YV5AO*, FO8AD*, FO8AB*, OA4AW*, Europeans*. Rod de Balfour, ET3-MZ, VQ4AQ, XE2KW, 5A2TZ, ST2DB, XZ2SS, CT3AN, VQ8CB, and Europeans.

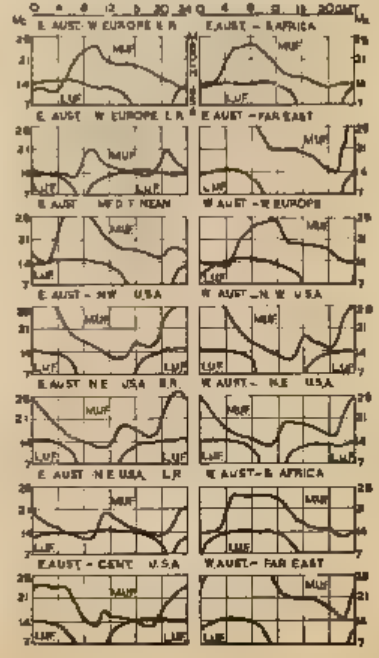
21 Mc. Bert 3HE ZB1TD* and other Europeans*, 3ADW. VP8GT*, ZS*, Europeans*, 3AZY Europeans*, HC1FS*, HC1ES*, LX1BI*, AP2L* VP6WR*, HC1PL* LU8DB*, KL7AZN*, 4X4FQ*, ZS8*, VS2*, ZB1*, VP6GT*, ZC4BA*, 5WO 4X4FQ*, VS1*, KP4AZ*, Europeans*, 7LZ YI2AM*, LU9DAH*, CE3CZ*, HC1ES* 7PM MP4KAC*, FK8AC*, HC1PL*, HC1ES*, CR9AH*, VS6*, CE3DY*, KZ5CP* Dave Jenkin: JAs. Europeans. Rod de Balfour: LU9DAH, CR9AH. 2AHH Europeans*, VS6*.

27/28 Mc.: Don 2RS spoke to Ws*. Les 4XJ contacted the following districts: W1*, W2*, W3*, W4*, W5*, W6*, W7*, and VE7AFA*. 7LZ adds W9* Dave Jenkin heard W6.

Rare QSLs were received by: 2AMB: VS4RO, 5KR VP7NT 8ARV: VS5KU, CR7BN. 5ATN: ZS8I 5WO CX2AX, CE3PV, KP4ABD, ZD4-BZ, TI2DLM, CS3AC, 4X4CK. 7LZ HZ1AEH. BERS195: PY1BFR, PY5VF, VK1DJ, VQ4AQ. Rod de Balfour, HK3PC.

Thanks to W6YY and VKs 1IJ, 2QL, 2RS, 2AMB, 3HE, 3KR, 3TE 3XB 3YS, 3ZA, 3ADW, 3ARV, 3ATN, 3AWS, 3AZY, 4RW, 4SE, 4XJ, 5BY, 5HI, 5JO, 5QR, 5RK, 5RX, 5WO, 7LZ, 7PM, and s.w.l's. BERS195, Dave Jenkin (VK3) and Rod de Balfour (VK7)

IONOSPHERIC PREDICTIONS FOR AMATEUR BANDS, MARCH, 1956



SHORT WAVE LISTENERS' SECTION*

Well boys, I'm warning you that you'll have to spark yourselves up, or be shown up. That's right, and by a YL, too. S.w.l. Lola Burton has only been listening on the Amateur bands for a few months, but has already picked up most of the lingo, and as evidenced by the list of reports, quite a few stations too. We welcome you to the S.w.l. Group, Lola.

Greetings are extended to another S.w.l., Alan Holmes, who read about our Group in some copies of "A.R." loaned to him by a friend. Alan tells of his disappointment at not receiving a good percentage of returns to his reports. Well, cheer up Alan, we have all been through the same trouble at some time or other.

It may be well worthwhile to make a few suggestions on sending reports to short wave stations. When forwarding reports, the following information is a MUST: The call sign or other identification sign of the station heard, if an Amateur station, the call of the station being worked, the frequency, at least approximate, on which the station was heard, date and time, preferably G.M.T. The readability, signal strength, and if a c.w. station, tone, should be given. It is always a help to send a short resume of the conversation heard, or if a broadcasting station, brief details of the received programme should be given. If there are any aspects about the transmission which appear peculiar, mention should be made of these together with as accurate a description of the effects as you can give. Most important of all, make your reports genuine. If a station is perfectly readable he need not necessarily be strength 9. I might also point out that a station, say in the United States, possibly may not appreciate a report from an Australian s.w.l. on a contact with an Australian Amateur. As is obvious, he will have already received a report from the station contacted at least days before your report can reach him.

It is usually the station whose signal strength is down who would like to know just where their signals are going. Most of the 20 signals may therefore be disregarded as far as sending reports are concerned. Of course, if it's a rare one you hear, send him a report by all means.

One more don't. Do not send a report to a local station who is working DX unless you consider that you can really make the report useful.

VICTORIAN S.W.L. GROUP

The January meeting of the Group was held in the rooms on Tuesday, 31st. The evening proved very interesting, the highlight of which was an attempt to operate equipment on 288 Mc. under the direction of Ian Woodman. Ian is one of the L.A.O.C.P. holders who regularly attends our meetings. Unfortunately no communication was established with any station.

Len Poynter did a very fine job organising the set-up, and appeared quite blown out at the finish. The meeting ended with everybody happy despite the lack of success, and a discussion on transmission lines would have provided quite good entertainment had not the time been running on. Another attempt may be made from the rooms in the near future.

For the benefit of any person interested, the S.w.l. Group meets on the last Tuesday in every month at the Institute Rooms, 191 Queen Street, Melbourne. Any person at all interested in radio is welcome to attend our meetings.

The Group would like to hear from any Amateur who would be willing to come to one of our meetings and give a lecture or short talk on some aspect of Amateur communication. If you do not feel at your ease attempting something of this nature, perhaps a visit of about five or six members to your shack could be arranged. If you can help us in any way, please contact the Secretary of the Group, John Wilson, 37 Rayment Street, Alphington, Vic., or ring Ian Hunt at FB 0361 Ext. 367 during the day.

We hope to hear more of the exploits of Groups in other States. Come on you boys in VK2, VK4, VK5, VK6 and VK7. Let us hear a lot more from you.

REPORTS OF AMATEUR BANDS

Ladies first, as always. YL S.w.l. Lola Burton reports hearing the following stations: 21 Mc.—W7KC, VR2CG, LX1SI. 14 Mc.—HK3FV, YV3BD, VS3UW, OD5EY, HZ1TA, CE3CO, VP1EJ, W5BJH, VS2EY, W4HKJ, CE7V5, ET2US, PY4YC, YV5DL, KP4WD, MP4BDW, LU6GD, W4GL, KA5CL, EI5Y, W8GIZ, G3CQE, W3BUC, W4MZK, KA3LZ, VQ2AG, OH5PE, HP3FL, KA2DB, KX6BU, KA2LG, W6GBK, FO8AB, YI2AM, W6TIZ, CN8MM, VP1JH, LU5DES, KC4WD, XZ2SS, TI5LA, DL4RP, VE7JB, GW4CP, G4MJ.

WIA-L3025 made available a list of stations but did not indicate the bands on which these stations were active.

WIA-L3015, Michael Ide, submits the following list of stations 28 Mc. KH6BS, W6VAD. 14 Mc.—JA6AV, GM3CDL, VS6CG, TG9AL, KA1WW HZ1TA, VU2SS. ZM6AT, KP4WD OD5AS, YV5AG, KX6BU, VS1CZ, ZS5JM, KH6QI, VS2ER, 4S7SR, KV4BB. Michael has also received cards from GM8MN, SM6SA and VS1EW.

WIA-L3007 has managed to make his receiver perk long enough to receive the following 14 Mc.—KH6IU, KH6AOX, KA6AUT, K4CKZ, W4MZK, VK6MK, ZE8JL, ZS5NO, KZ5AD, W4DPI, K2CAK. HP1EH, VK1IJ, EA7GW, VR2AK, ZM6AT KX6ZB, KH6BSK, KH6AHG/P, G3BTG, EI2W, GW3IHN KA5CN, JA6AV, VU2SS, ZS5JM, CT1PK, EI3S, HB9ET, PY2CK, KP4ABD, ZK1BS, W1QPN, VK6MG, VS6CH. Cards have been received from ZS1SW and ZS2BC.

Other cards being held for members of the S.w.l Group are from PY6BP, DL1JV, W7KT, W2FLD and W6DI. Keep those reports coming in together with any other dope you may have on band. More material is what we want. Station descriptions, reports, or hints and kinks you think someone else may be able to use, any of these details are welcome. Address your correspondence to John Wilson, whose address is given above, or to Ian J. Hunt, 101 Robert Street, Northcote.

* Compiled by: Ian J. Hunt, WIA-L3007, 101 Robert Street, Northcote, Vic.

CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

FIFTY-SIX MEGACYCLES AND ABOVE

V.h.f. DX has been excellent lately. On the 50 Mc. band openings have occurred to VK2 and VK4 from VK3. On 10/1/56 the VK4s worked VKs 2, 3, 6 and 7. On 12/1/56 ZL2DS broke through to VK3 for a short period. On 10/1/56 at 2010 hours E.S.T., VK1IJ of Macquarie Island reports hearing VK4GG and VK4BT at R5 and S8. On 22/1/56 VK4NG reports working JA1AHS at 1440 to 1447 hours E.S.T. The JA reported VK4NG at R5 S9 and he gave the JA R5 S8. VK4NG also heard JA1AEW.

VICTORIA

Athol 3CF has built up a new converter using a 6HQ7A as a neutralised p.p. triode, 6AM4 grounded grid, triode 6J6 as mixer, with cathode coupling in the output. The xtal is on 11.5 Mc., 6AG5 xtal osc. is on its fundamental and the plate circuit is tuned to the fourth harmonic with a second 6AG5 trebling to 138 Mc. The AR88 is tuned from 8 to 10 Mc. It is working very well and Athol is happy with the results he has been obtaining.

The programme for the last V.h.f. meeting included two short lecturettes, the first by Bob 3OJ on "An interference unit of disposals vintage," and the second by 6ZAA and 6HK, who gave a short talk on the v.h.f. activity in VK6. The result of the first v.h.f. field day for this season was announced, first place and winner of the certificate being George 3GM, second Len 3LN and third Reg 3ZAD. Following the second field day on 12th Feb., which coincided with the National Field Day, it was decided to hold a further field day on 18th Mar. This date coincides with the VK3 V.h.f. Autumn Field Day. For full details and rules governing v.h.f. field days for this season, see copy of "A.R." for Jan., 1956, p. 14.

The v.h.f. meeting in April, to be held on Wednesday, 18th, will be the city-country get-together and will be held at the rooms, 191 Queen Street.

V.h.f. DX has been excellent lately. On 144 Mc. 7PF and 7LZ have been worked by several of the VK3 gang. They are on most nights looking for VK3 contacts, calling on the hour at 8 and 9 p.m. Beam direction from Melbourne is approx. 150 degrees. The VK3 country stations have been coming through into Melbourne at very good strengths and a couple of comparatively rare ones in Gippsland have been audible. They are 3TY of Sale and 3ZAB of Traralgon. Stan 3ZAB had his first contact into Melbourne some weeks ago when he worked 3ALY at Essendon. Other stations that have been on from the Gippsland area are 3VL, 3US and 3DI of Leongatha, and 3ZD of Warrigul. George 3GM is still maintaining his skeds on Thursday and Sunday nights with unremitting enthusiasm and has now placed a beam on the top of a 100 ft. steel poppet tower on the site at Mt. Bunninyong. He has been very successful from this location, he calls VK7 on the hour and has got through on a number of occasions. On 144 Mc., look for 2WH on Thursday and Friday nights. Skeds are kept with 3GM who calls 2100 to 2135 hours, then listens for 2WH from 2135 to 2140 hours.

During the holiday week-end Laurie 3ALY, with Bob 3OJ and Len 3LN, went portable on top of a hill at Portarlington. While tuning his rig, Laurie heard 3TY at Sale working 3ZD at Warragul and he used the standard low frequency technique of giving a short break when 3TY was transmitting and Len and Bob nearly fell out of the car with amazement when 3ZD gave a short break acknowledging 3ALY's call. Then followed a 100 per cent. three-way contact between Sale, Warragul and Portarlington.

If you're after a VK2 contact on the 144 Mc. band, keep a check on approx. 144.1 Mc. for 2RS at Albury, who calls each evening at 8 p.m. with the beam towards Melbourne. The bearing of Albury from Melbourne is approx. 49 degrees.

6HK and 6ZAA operated mobile whilst on a holiday trip to Melbourne and were eagerly sought after by the VK3s for contacts and contest numbers.

Stations with gear for the 56-60 Mc. band include 3XM, 3AHL, 3YJ, 3YS, 3CI, 3OF, 3VL and 3US. 3VL and 3US, who are located in Leongatha, operate on 56.56 Mc. and are looking for contacts after about 8 p.m. each evening.

It is very pleasing to hear the familiar voice of Max 3BQ on the air once again. Max is looking very well after his convalescence and is the friendly, congenial personality down at the low end of the band that we have all missed so much during the past few months. It is also very pleasing to hear the long absent voice of Jim 3BA back on the band again, even if he had to borrow his brother's portable gear to do it. Herb 3JO, President of the V.h.f. Group, is making steady progress on the way to recovery after a major operation. Laurie 3ALY will have to curb his radio activity (nothing to do with uranium) during the next few months as he is planning to build a caravan. Maybe this will be good news for some of the other chaps, as with Laurie out of the way, there'll be more DX for others to work. A familiar whining sound of long standing is now missing from the 2 mx band. Ian 3ALZ now has the a.c. connected and has been able to dispense with his hand generator.—Phyl Moneur.

SOUTH AUSTRALIA

Last month was a very busy one for the v.h.f. boys in this State, we were very pleased to meet in person and entertain (we hope) Don 6HK and Wally 6ZAA from Perth. Don had mobile gear for 144 Mc. and together with mobiles 5GL, 5KC and 5MT, much fun was had by all, as they say.

From Mt. Lofty all the mobiles QSOed 6BC on 144 Mc with signals varying from S4-S8 on phone. At Mt. Lofty it is no trouble to work Hughie with a 10 watt mobile tx and a car radio aerial adjusted for a quarter wave on 144 Mc. as a vertical radiator. Sigs vary from S4-S8 at both ends. Many mobile to mobile tests have been carried out between Ken 5KC and your scribe and in future issues I propose to give some details of the tx's and rx's which are in use in the hope that they may be of some help to any others who are perhaps interested in going mobile.

Reg 5QR with renewed vigour has erected a 16 el phased array for 144 Mc. and is very pleased with the results so far. He has also constructed a xtal locked converter for 288 Mc. and with similar gear to be constructed by George 5GB, they hope to "shatter" the existing Australian one mx record; best of luck chaps!

There has been little activity in the country on 144 Mc except of course for the very reliable and consistent signal of 5BC in Renmark. I believe 5EN has been on only a couple of occasions and 5EF in Gawler has also been very quiet. The city boys however have been quite active and one can now call CQ even while mobile and generally succeed in having a contact. Neil 5ZAW, Phil 5ZAD and Ian 6ZAA have been on 2 mx fairly consistently over the past month.

The DX season on 50 Mc. has been extremely poor as far as VK5 is concerned. Col 5RO, Hugh 5BC and Reg 5QR have been active, but few contacts have been had, due mainly to a general lack of stations and not necessarily poor conditions.

Bob 5PU has built a nice xtal converter for 288 Mc. and this, used in conjunction with a planned xtal tx to be built by 5MT, should be instrumental in extending the 288 Mc. record distance of 105 miles.—5MT.

WESTERN AUSTRALIA

The February meeting of the V.h.f. Group heard an informative lecture from Don 6ZAV on his experiments with skeleton slots. Don came complete with models of the arrays and from the many questions asked it was very evident how interesting his talk had been. John 6ZAG was welcomed to the meeting and an apology was received from another new member, 6ZAJ, who is in National Service.

144 Mc.: Event of the month has been the Dawn Patrol activity. Wally 6WO in Albany has been heard consistently at 0615 hours in Perth over the 240 mile path. He has been worked by Rolo 6BO, and Don 6ZAV has heard Wally and been heard in Albany, but no reports have been exchanged to date. Ralph 6ZAD and Cecil 6ZAZ in Perth and Don 6DW in Bruce have also heard Wally. Signals have been heard from Wally every morning over a period of 14 days, but not always at a workable strength. Of interest is the fact that the signals at 0615 hours are consistently better than those at 1700 and 1900 hours. It appears that you must really earn your DX!

Another item of interest was the copying of Don 6HK's mobile tx (10w to a halo) from outside Northam (50 miles) through hilly terrain. With a beam and higher power, what would signals from Northam be like?

Tom 6ZAR in Brunswick intends joining in the V.h.f. Group's next fox hunt. Tom looks as though he will be in a nice net with 6XI in Dardanup and 6ZAL in Bunbury. Checks between 6ZAR and 6XI have been very successful with mod. osc. type gear.

Also promising well is the news that Frank 6FB found much interest in v.h.f. in Geraldton. At least one person has taken the exam. and likely to obtain a Z call. Jim 6JH is also interested. Ralph 6ZAD has been temporarily shifted to Forest on the Trans. line and hopes to have checks with Perth over the 400-mile path. Best wishes to you, Ralph!

The news of this country activity is very encouraging. It appears that with at least 25 watts and a good beam—say a stacked yagi or phased array—and a good converter—cascode or 6J6 type—distances up to 80-100 miles should be consistently good. For longer hauls, however, higher power would be desirable.

Again the offer of the V.h.f. Group is repeated. If you would like a demonstration of v.h.f. gear at your QTH or any help at all to get gear going, then contact your scribe—Wally Howse, 53 Ellen Street, Fremantle (phone L 1363), who will arrange for the resources of the Group to help you.—6ZAA.

TASMANIA

January has seen a lot of activity on 144 Mc. in Launceston. VK3 stations have been worked by 7GM, 7LZ, 7PF on eight days, the best opening being on the 22nd when 7PF worked 18 VK3s, 7LZ managed 4 VK3s, and 7GM missed out entirely. This made 7GM suspect his new five over five, but later openings make it seem as if it was just bad luck. Much has been learnt from these openings. Signals usually did not become much good until 2100 and then the band stayed open until at least 2400 hours.

Often the hardest part of working into VK3 is getting someone to hear you. Some VK3s sure can natter. 7LZ is all set for ulcers after hearing stations rag chewing for hours with strengths up to S9 and this with the VK3s beams side on. The openings apparently were due to mainly local inversions, no subsidence inversion being around.

The scoring system in the Ross Hull Contest does not take into account Interstate working on 144 Mc. as the Launceston gang can double their points for working a local three miles away, making 10 points for a first contact, while VK3, 300 miles away, only rate 5 pts.

With the increased activity beams seem to be the main subject. 7GM has put up a new five over five and 7BQ and 7LZ are going to try a five over five also. 7LZ is changing beams since finding that the feeder to his present 12 el. array gets hot every half wavelength. 7PF is working on beam theory for a beam to end all beams.—7PF.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK4FJ	31	181	VK3JD	1	155
VK3BZ	3	178	VK4KS	9	152
VK4HR	12	176	VK6KW	4	150
VK6RU	2	170	VK3LN	11	141
VK3ATN	26	166	VK4RW	23	141
VK3EE	18	163	VK3AWW	14	140

C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3BZ	6	223	VK5BY	45	181
VK3FH	15	210	VK3CK	36	180
VK4FJ	29	206	VK4EL	9	175
VK4HR	8	200	VK3CN	1	163
VK3KB	10	200	VK6RU	18	161
VK2EO	2	183	VK5RX	23	159

Amendments

VK3UM	12	120

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3BZ	4	231	VK2NS	16	195
VK2ACX	6	225	VK3HG	3	181
VK4FJ	32	217	VK4EL	10	175
VK4HR	7	214	VK5KW	13	171
VK6RU	8	204	VK3DI	3	170
VK3JE	12	186	VK4DO	15	158

FEDERAL, QSL, and DIVISIONAL NOTES

FEDERAL

Fed. President: W. T. S. Mitchell, VK3UM.
Fed. Secretary: L. D. Bowie, VK3DU, Box 2811W, G.P.O., Melbourne.
QSL Bureau: R. E. Jones, VK3RJ, 23 Landale Street, Box Hill, E.11, Vic.
DX C.C. Manager: A. G. Weynton, VK3XU, 30 Park St., West Brunswick, N.10, Vic.

NEW SOUTH WALES

President, Jim Corbin, VK2YC.
Secretary: Harry Hickin, VK2ACH, Box 1734, G.P.O., Sydney.
Meeting Night, Fourth Friday of each month at Science House, Gloucester Street, Sydney.
Divisional Sub-Editor: Ted Whiting, VK2ACD, 16 Louden Street, Five Dock.
QSL Bureau J. B. Corbin, VK2YC, Box 1734, G.P.O., Sydney (Inwards and Outwards)
Zone Correspondents North Coast and Tablelands Noel Hanson, VK2AHH, Ryan Ave., West Kempsey, Newcastle' Ron McD. Stuart, VK2ASJ, 68 Dunbar St., Stockton, Coalfields and Lakes Harry Hawkins, VK2YL, 9 Comfort Ave., Cessnock, Western: W. H. Stitt, VK2WH, "Cambijowa," Forbes; Sth. Coast and Southern: Eric Fisher, VK2DY, 3 Oxlade St., Warrawong; South Western: J. W. S. Edge, VK2AJO, Wallace St., Coolamon; St. George: Chas. Coyle, VK2YK, 54 Carlton Cres., Kogarah; Western Suburbs: Barry White, VK2AAB, 33 Flavelle St., Concord.

VICTORIA

President: G. Dennis, VK3TF.
Secretary: D. L. Robinson, VK3ALD.
Administrative Secretary, Mrs. May, C.O.R. House, 191 Queen St., Melbourne.
Meeting Night: First Wednesday of each month at the Radio School, Melb. Technical College.
Divisional Sub-Editor: Phyl Moncur, 235 Union Road, Ascot Vale.
QSL Bureau: Inwards and Outwards—W.I.A., 191 Queen St., Melbourne, C.1, Vic.
Zone Correspondents: Central Western' W. J. Kinsella, VK3AKW, Magdala, Lubeck; South Western: W. Wines, 48 Cranley St., Warrnambool, and W Zimmer, VK3AWZ, 70 Skene St., Newtown, North Eastern A. D. Buchanan, VK3FD, "Booroondal," Wahring, Far North Western M. Folie, VK3GZ, 101 Lemon Ave., Mildura, Eastern' K. V. Scott, VK3SS, Johnston St., Maffra; North Western: C. Case, Cumming Ave., Birchip.

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President: Frank Bond, VK4ZM.
Secretary: W. J. Rafter, VK4PR, Box 638J, G.P.O., Br[illegible]ne.
Meeting Night. Fourth Friday in each month at the Royal Geographical Society Rooms, Ann Street, City.
Divisional Sub-Editors: F. B. Bond, VK4ZM, and W. J. Rafter, VK4PR.
QSL Bureau' Inwards—J. Files, VK4JF, Wanda St., Buranda, Outwards—Miss Clair O'Brien, 63 Jardine St., Stafford.

SOUTH AUSTRALIA

President: G. M. Bowen, VK5XU.
Secretary: B. W. Austin, VK5CA, Box 1234K, G.P.O., Adelaide. Telephone: UX 2621.
Meeting Night: Second Tuesday of each month at 17 Waymouth St., Adelaide.
Divisional Sub-Editor: J. M. Coulter, VK5JD, 69 Conmurra Ave., Ackland Gardens,
QSL Bureau: Geo Luxton, VK5RX, 37 Belair Rd., West Mitcham, S.A. (Inwards and Outwards).

WESTERN AUSTRALIA

President: F A. T. Tredrea, VK6FT
Secretary: J Mead, VK6LJ, Box N1003, G.P.O., Perth, W.A.
Meeting Place: Perth Technical College Annexe, Mounts Bay Road, Perth.
Meeting Night Third Tuesday of the month.
Divisional Sub-Editor R. H. Atkinson, VK6WZ, P.O. Box 127, Geraldton.
QSL Bureau: Jim Rumble, VK6RU, Box F319, G.P.O., Perth, W.A. (Inwards and Outwards).

TASMANIA

President: F. J. Evans, VK7FJ.
Secretary: W. G. Tait, Box 371B, G.P.O., Hobart.
Meeting Night, First Wednesday of each month at the W.I.A. Club Room, 147 Liverpool St., Hobart.
Divisional Sub-Editor: V. F. Dore, VK7JD, 29 Brent St., Glenorchy.
QSL Bureau' K. A. Johnston, VK7RX, 34 Tower Rd., Newtown.
Zone Correspondents: Northern: M. A. Chaplin, VK7CA, 56 Trevallyn Rd., Launceston, North Western: S. H. Pattison, VK7UW, 36 Mark St., Burnie., Tas.

PAPUA—NEW GUINEA

President: F. M. Nolan, VK9FN.
Secretary: D. F. Lloyd, VK9OQ, C/o. O.T.C. Receiving Sation, Port Moresby.
Divisional Sub-Editor: W. Holland, VK9BW, C/o. P O. Box 76, Rabaul.
QSL Bureau: D. H Beadel, VK9DB, C/o. P.O. Box 107, Port Moresby.

FEDERAL

[illegible] GEOPHYSICAL YEAR 1957-58

Federal Executive has been happy to receive from Professor H. C. Webster, of the Queensland University, a letter in which it is suggested that Australian Amateurs may play an important and interesting part in the scientific investigations of the International Geophysical Year 1957-58.

Quoting from his letter, Professor Webster says: "One of the phenomena which is to be especially examined is the 'aurora polaris'. As you know, the aurora australis is sometimes seen in Tasmania, and the southern parts of continental Australia, and is regularly seen in the Australian antarctic dependencies.

"Dr. Gerson, of the U.S.A., has pointed out to me that Radio Amateurs operating in the 50-60 Mc. band can assist in the investigation of aurora by reporting evidence of freak reception on this frequency, particularly when the great circle joining the transmitter and receiver goes well south. Such freak transmissions can arise from reflections of the radio waves from the auroral discharge itself and thus add to our knowledge of the phenomenon."

The Professor goes on to say that he is most anxious to find out if any of our members would be willing and able to co-operate in such an enterprise. Federal Executive has replied to the Professor stating the matter will be put before members and they will supply him with the names of those interested.

In the past, Amateurs in Australia have had but little opportunity to be included in scientific investigations of such a high order. This therefore constitutes a challenge to the efforts and enthusiasm of members generally, be they v.h.f., u.h.f., or DX. A chance such as is offered by Professor Webster (who, incidentally, is Convenor of the I.G.Y) should be seized upon by all. This is the time when we must take our place along with other Amateurs in the Southern Hemisphere in some worthy scientific research.

In order that organisation shall be on a Divisional basis, members are requested to send their names into their Divisional Headquarters at the earliest possible moment so that Professor Webster can be informed and plans prepared. This is a real opportunity.

DX CONDITIONS AND SUNSPOTS

With the rapid improvement in DX conditions the following information, kindly made available by the Amateur Administration, is of great interest and augurs well for the next few years.

The forthcoming Sunspot Maximum is likely to be Unusually Early and High

"As is well known, different astronomical observatories throughout the world keep a constant watch on the sun in order to determine the daily occurrence of the number of sunspots. The latter exert a very pronounced influence on the ionisation of the ionosphere, which in turn determines the propagation conditions of radio waves. As is also well known, the approximate length of a cycle is about 11 years.

"The Secretariat of the C.C.I.R. constantly follows, with great interest, the results of these astronomical observations and the predictions made by several radio organisations of the expected values of the sun's activity in the months to come.

"We wish to draw the attention of all users of radio waves to the unexpected very rapid rise of the observed 'provisional sunspot numbers' which took place during November, 1955. Indeed this rapid rise far superseded all predictions known to us.

"There is an empirical rule, deduced from many earlier observations, stating that a forthcoming sunspot maximum will be the higher the faster the sunspot numbers increase during the beginning of the build-up of a new cycle. The last minimum occurred during the middle of 1954, and at present we are in the build-up phase of a new cycle. This build-up is now occurring at an exceptionally rapid rate so that, in all probability, the next sunspot maximum will be of outstanding intensity Professor M. Waldmeier, Director of the Zurich Astronomical Observatory, the well known expert in this field, expects the highest 'smoothed monthly relative number' to be about 150, or even larger. Moreover, he expects the coming sunspot maximum to surpass all the sunspot maxima so far observed, and he predicts that this maximum will be reached as early as the middle of 1957.

"If the above extrapolations prove to be accurate we may expect the change to higher frequencies for long distance radio communications to be necessary much sooner than might have been generally thought. It is for this reason that we herewith draw the attention of all concerned to this unexpected phenomenon."

—Prof. Dr. Balth. van der Pol,
Director, C.C.I.R.

T.V. TEST TRANSMISSIONS

Those Amateurs who are interested in preparing and testing t.v. receivers will be interested to know that a signal is available in Adelaide and Melbourne. These are low power, but are of such type as to be suitable for receiver checking.

The Adelaide transmission is on Channel 3, 183-195 Mc., while in Melbourne it is Channel 10, 209-216 Mc.

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Divisional QSL Managers and others are requested to note the changed address of the U.C.A.R. QSL Bureau which now is OQ5AO, G. Patigny, Box 2696 Elizabethville, Belgian Congo.

Clouet, FA8DA, writing under date of Dec. 28, states he has just received from FA9RW a bundle of VK QSL cards dating back to 1949/51. He has hastened to reply to them all.

The Asociacion Radio Ecuatorian, whose QSL Bureau is Box 289, Quito, Ecuador, has supplied us up to date list of addresses of all HC Amateurs. Any QTH is available on application to the Federal Bureau.

The D.A.R.C. QSL Bureau, Box 99, Munich 27, Germany, advises that they will handle cards for DL2, DL4, DL5 and 9S4 in addition to DL1, 3, 6, 7, 9, 0 and DJ1, 3, 5 and DI call signs.

Alan Perriman, VK5PO, ex-VK1FN, advises under date of 1st Feb., that he has been exceptionally busy since returning from the far south. Alan has moved six times in the two years since his return, got married and spent a lot of time in travel between Adelaide and Woomera. He is firm in his intention to send out all cards and hopes to achieve this in the near future. His present QTH is 17 Newton Terrace, Enfield Heights, South Aust. Alan has heard nil from Jim Carr, ex-VK1JC, who was with him at Heard Island.

KX6ZB is operated by Pappy Stoughton on Majuro Island in the Marshalls group and is the former KC6ZB of Yap Island in the Western Carolines. Pappy nowadays is mostly on 14 Mc. phone with a Viking tx and a long wire antenna and will QSL all contacts for both call signs.

David Johns, who operated VK1DJ at Macquarie Island in 1954, has sent out 300 cards through the various Bureaux. Anyone who has missed out should contact David at 28 Waterworks Road, Hobart, Tasmania.

Terry Knofflock, VR2AG, ex-ZL3PY, who operates from the R.N.Z.A.F station at Laucala Bay, Fiji, has a nice card portraying local scenery Card is available for all contacts.

I5AAW, ex-I1AAW, of Box 85, Mogadiscio, Italian Somaliland, is currently active on 14 Mc. c.w. around 1530z and has a strong signal, but is monopolised by the powerful D stations.

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FEDERAL AWARDS

NEW COUNTRIES

The following additions have been made to the DXCC Countries List: Laos (XW8), Cambodia (XW8) and Viet Nam (F13) and credits will be given starting 1/2/56 for confirmation of contacts made on or after 20th July, 1955.

As of 19th July, 1955, credits will no longer be made to listing shown as French Indo China (FI8) Credits for French Indo China contacts must show the contact date prior to 20th July, 1955.

W.A.V.K.C.A. AWARD

Certificates have been issued to ON4AU, ZL2GX, VE3AW, SM5CO, G2MI, W2QHH, and ZL2AFZ. A total of 25 certificates have been issued to 31/1/56.

G. Weynton, VK3XU, Awards Manager

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VICTORIA

The first general meeting for the year was very poorly attended, in fact the worst attended general meeting in post-war years. Possibly the reason for this was the cancellation of the scheduled lecture. This was a great pity as Fred 3YS went to an enormous amount of trouble to arrange what turned out to be a most enjoyable programme. It took the form of short lecturettes appertaining to field days and with the National Field Day imminent, the choice of subject was most appropriate. Fred 3YS started off the lecturettes by giving a resume of the rules and conditions of field days in general. This was followed by Harry 3GU who gave an illustrated description of a simple modulator for cathode modulation of the Type 3 Mark 2. This in turn was followed by Hans 3AHH who spoke on a battery operated v.f.o. controlled c.w. tx. Hans also illustrated his lecturette with blackboard diagrams. Then Len 3LN gave his experiences and advice on what to do and particularly what not to do on a field day. Len's experiences are very wide and very varied as he has participated in every field day in the post war period. This was then followed by David 3ADW who gave a description of an all band v.f.o. controlled portable piece of equipment. At the conclusion of these lecturettes, Bill 3TX, who has recently returned from a trip abroad, gave a very amusing and interesting talk on his experiences in the U.K. with special emphasis on his visit to the R.S.G.B. Headquarters and to the Radio Show conducted by the R.S.G.B. Bill, with his very dry humour, mentioned that he had no language difficulties whatsoever while travelling through the U.K. He gave us lots of laughs and those present enjoyed his wit and also hearing of his experiences.

The following were welcomed as new members to the Institute. Full members—Messrs. R. Scott (3OS), W. Carlyle (3JP), B. Gillies (3AGG), G. Macfarlane (3AYM), W. Michie (3ZCM), and N. Kay; Associates—Messrs. J. McEwen, R. Ruse, D. Norman, J. Manton, M. Lawton, R. Hargrave, J. Shaw, R. Owen, R. Davis, N. Henderson, J. Murray, J. Dunne, J. Pitman, R. McEwen, and A. McKean.

The next general meeting of the Institute, to be held on Wednesday, 7th March, will be the postponed lecture on t.v. which will be given by Mr. Kempson, a member of the Melbourne Technical College staff, and will be based on the new t.v. operators' commercial license.

80 METRE TRANSMITTER HUNT

A good crowd attended the last 80 metre tx hunt, which was held in perfect sunshine. The tx was hidden by Len 3LN at Campbell's Cove, which is in a very inaccessible position from the Melbourne direction. It is on the coast at the back of Point Cook R.A.A.F. station. Here 3LN found the utopian set-up where a farmer had laid out nearly a mile and a half of nicely insulated electric fences around his property. Len bridged them all together and took a fine wire some 400 feet over a road to the tx hidden in boxx thorn bushes.

Laurie 3ALY was first on the location but took nearly an hour to find the tx by unbridging the various sections and narrowing down the position of the hidden tx. He was followed by Roy 3ARY and Reg 3ZAD. The harmonics made the most of the beach and enjoyed a swim and all had a picnic tea together on the beach to finish off a pleasant afternoon. The next 80 mx tx hunt will be held on Sunday, 25th March, when the tx will be hidden by Len 3LV.

BI-MONTHLY SCRAMBLE, DEC. RESULTS

The second Bi-Monthly Victorian Scramble was held on 8th December, 1955. Although a total of 36 stations participated, only eight logs were received! The winner was 3ALY with 19 points, all earned on 144 Mc.

Section C: 3ALY 19, 3ADW 15, 3AKR 15, 3ZAQ 12, 3ADL 11, 3WI 8, 3OJ 7, 3ZD 6.

Checking: 3HE and 3AHH.

The results of the February Scramble, held on 6th February, 1956, will be announced in the next issue. Transmitting Amateurs resident in the State of Victoria and Short Wave Listeners resident in the Commonwealth of Australia are reminded that the next Scramble will take place on 2nd April, 1956 (Easter Monday). How about making it a complete success? Remember, there is more than one section, and the top scorer in each section is entitled to a very attractive certificate! OK, send in your log by the 30th April, '56! Rules of this Scramble can be found on page 12 of "A.R.," September, 1955. Send your log to the Divisional Contest Manager, W.I.A., Vic. Div., 191 Queen Street, Melbourne, C.1. Good luck!—3AHH.

[illegible]

The zone generally sounds to be very busy lately, quite a lot of activity on the various bands although there is not much to report. One of our zone members, G Munday, has now commenced a new job with Les 3DX in radio, so looks as though he will be guided on the air in time with a little of 3DX's tuition. 3EQ has been mobile in VK5 using one of 3AGD's 8 ft. whips. 3EQ and Bill Wines spent a few hours with the Type 3 at 3AGD's QTH before 3EQ went to VK5. 3AKR has been heard again, keep it up Kev. Brian 3UT is on now and again. Harry 3XI has a new shack for the radio, also a new beam approx. 100 ft. high, so should go places.

Bill Wines is starting to get busy for the Convention which will be held in Warrnambool on the week-end, 17th and 18th March, so hope to see quite a lot of chaps turn up as it will be a good show. Also anyone who requires accommodation must let Bill Wines know before 3rd March as it is hard to get booking otherwise we will be able to make arrangements for caravans if required. Hope to see the XYLs come along.

Chris 3AXU has sent the following: Ron 3KX has been away on holidays. Gordon Eason has been busy locating hum troubles, while Mart 3AKU has been busy on 80 mx with his AT5/AR8 combination. 3AGV seems to have a good score in the Ross Hull Contest, he is also keen on 28 Mc. Chris 3AXU has been inactive as he is busy shifting to new QTH and getting the AT5 going. During January 7AC called on 3AGV and 3AXU. Gordon was having a QSO with Col 3FO and Col couldn't believe his ears when 7AC chipped in, he thought he was hearing things, but soon woke up that David was in 3AGV's shack. Well chaps hope to see a lot of you in our city for the Convention.

NORTH EASTERN ZONE

Stan 3AGT seems to be in quite an impenetrable stronghold for a news collector. George 3GD received quite an issue of cards from his 21 Mc. folded dipoles. Tom 3TS is thought to have been in on it too. Col 3WQ passed out the cards as one of his last jobs in this zone. Les 3ALE is coming back on the air a bit now. Bruce 3AGG and Brian 3ASF are on 20 mx. Johnny 3ACK is returning to Radio when business permits. Murray 3HZ was seen in Wangaratta a while back. There is nothing of Alex's (3AT) activities. Peter 3APF is in with Alan 3UI and Syd 3CI on the 5 mx skeds. Keith 3JC is not back on Radio yet. According to Des 3CO, Doug 1LJ said that the temperature at Macquarie Island was up around 43 degrees during the day. That was at the beginning of the year though.

Unfortunately the Euroa VL3 frequency that Associate Jim Harrington works on is a bit too low for standard Amateur equipment. Des 3BP was away on holidays on last advice. Henry 3HP is working hard on his VL3 skeds with assistance from Howard 3YV. Jack 3AKC and his XYL, now at a new address, are receiving congratulations on the arrival of a son on 4th Dec. Jim 3JK has a new Collins 75A type 3 rx now. Bruce 3QC has loaned Bill 3AWQ a tx. 3AMZ is now in Wangaratta. 3IZ was up that way on a trip back to Maryborough, and Doug 3PO was up here with a Type 3 portable. Ron 3AQG was to get some help from Associate Ken Mercer putting up his antenna. 3QL has been heard operating in Bright. Secretary Earle Scoones is on shift work now. Ray 3FT is not ready to go on the air yet. Ken 3KR reports DX on 20 mx is quiet.

[illegible]

A welcome voice on the 80 mx hook-up was Bill 3WE who has not been heard for some time. Very pleased to hear the old sig again. Ron 3PR comes on regularly; has grid leak bias in now and a clamper tube; talking of

getting a new rx. Rex 3VL and Gwen 3US are on 2 and 5 mx. Jim 3DI also on 2 and 5 mx, so Leongatha is well represented, which is more than we can say for some places. Cliff 3AJA working DX on 7 Mc. c.w. Joe 3TO is off 2 mx due to an 832, but if I know Joe he will be on again soon. Ian 3AAV has broken the ice on 20 mx with a KA and got 5/7 too; also a consistent station on the hook-ups.

Jack 3AJK has not got the big rig built yet. Peter Thorne, a second-op. at 3AJK, is studying for his ticket and hopes to sit for it in April; we wish you luck Peter. Terry Phelley, a.w.l. from Moe, is still awaiting cards from overseas; patience is a virtue, Terry. Another chap who borrowed some books from me to study is Max Cherry, so Moe is looking up.

Graham 3QZ still consistent; his XYL, who has been sick for a long time, is progressing well. Hope this progress continues Graham. Graham also operates on 2 mx. Bill 3TY is active on 2 I believe, but we have not heard him on 80 mx at all for some time. Bert 3BB has not been on for some time, but I hear he has been on holidays. Jim Quig, who holds a Z call in Morwell, has just gone into a new house there and expects to be on 2 mx soon. Gordon 3TH is on 2 mx at the moment, the wind blew down the 80 mx aerial, so get it up again Gordon and let's hear from you.

The Bairnsdale boys are very quiet, would like to hear from you chaps down there. Gilbert 3AYM is re-building the rig; don't be too long Gilbert. Martin 3AMV is still off with burnt-up trannie; surely you can find something to do the job Martin and put Warragul on 80 mx again. Ron 3ZD is on 2 mx regularly and working local and distant stations. The 2 mx boys hold a hook-up every Sunday night at 8 o'clock. A couple of visitors who called on Graham 3QZ, were John 3AKJ and Peter 3IZ who, with their respective wives, were on their honeymoon. I am sure that all the boys in the zone wish you both a very happy life in your new sphere. Also the State President, Gordon 3TF, called on Graham and passes his 73 to all the boys.

GEELONG AMATEUR RADIO CLUB

Chas 3XH recently gave enthusiasts a talk on the use of navigational aids in aircraft. The speaker was very conversant with his subject and gave some interesting highlights on the precision of radio navigation in the most modern aircraft. Members also had a discussion on the subject of Noise Limiters and S Meters, and some interesting information was tabulated. (How about an article on the subject.—Editor.)

Peter 3ZAV, our most enthusiastic 2 mx member, has successfully worked Tasmania and is whooping with delight; our congrats. Some interesting Sunday afternoons have been spent at the various beach resorts in our district and this has afforded the C.D.E.N. members an opportunity to work their gear with members in Geelong. Jim 3ZBR and Bill 3AWZ recently visited the disposals sales and are still kicking themselves over some fine bargains missed! Ted 3AEH has built a new mobile rig which will cover all Amateur bands. 3BU and 3WT (both Bills) are experimenting with the T2FD with good results. Peter 3APK is active again and has been seen carrying around a large bundle of "CQ" magazines. Alf 3AJF is plagued with the club's new tx which is being built round a Geloso.

Jack 3SY is to be congratulated on obtaining his commercial t.v. licence at the recent exam. Arch 3BW is bowling over the DX judging by the QSL cards arriving from distant climes. We all hope that the large envelope will arrive for Jim 3ZBR soon so as we can listen to his crisp c.w. on the lower frequencies—then the old Z call on 2 mx will be replaced by VK3A—.

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QUEENSLAND

The first general meeting for 1956 was well attended though it was held in darkness. The flickering light of the three candles gave the meeting a "high class continental restaurant lit by candelight" atmosphere without the normal cover charge of said establishments. The results were amazing—a voice from the body of the meeting would say "VK4 so-and-so moves that . . ." to which another voice would add "VK4 so-and-so seconds the motion." Yes, the meeting had a nice atmosphere. One suggestion received for consideration was that when a man called CQ on DX bands and hooked up with a local, the stations should QSY to the top of the band which was not usually well populated and leave the middle open for DX QSOs, at the same time keeping all the band populated.

Visitors to the January meeting were Bert 4AO and Harry 9HO.

The Annual General Meeting will be held on 23rd March and the Annual Dinner date has been fixed for 24th March. All country members who can attend please advise the Secretary not later than 10th March so that catering can be attended to. The subscription is 17/6 per head.

The financial year ends with March and subscriptions are due for the new year. The subscriptions are 35/- city members and 30/- for country members.

Personal pars are a bit scarce this month. Vince 4VJ has taken XYL and harmonics for a spell on the South Coast and has ignored the long range weather prophets' predictions of wet conditions. Al 4PA is also on holidays and the long campaign of propaganda by 4ZM has almost persuaded Al to come back on the air.

Jim 4XL has a new modulation transformer and it really sounds nice. Jim is also re-building his rig in spite of the fact that he already has an all-band affair with 829B in the final. Bill 4WD is back on the bands at Sandgate after quite a spell away from Brisbane, north of the tropic of Capricorn (just a couple of miles north). Nice to see Evan 4EF at the January meeting and hope to hear signals from him now that he is back in Brisbane.

It looks like Council will have to scout around for new rooms for the general meetings as the R.G.S. rooms are probably being booked permanently by another group. If anything does crop up we will let you know in "QTC." 73 from 4ZM and 4PR.

T.A.R.C. NOTES

The Annual General Meeting of the above club was held at the residence of 4BX and all present paid their dues, which was quite a welcome lift to the club's finance. The following members were duly elected for the ensuing year: President, 4RW; Vice-Presidents: 4JH and 4BX; Secretary, 4WH; Asst. Secretary, 4PS.

A box containing radio parts for disposal to members at nominal prices was promised by 4TQ, proceeds to go to club exchequer. Many thanks in advance OM.

Quite a lot of discussion was held on proposed 144 Mc. inter-city link and eventually it was decided upon and prototype to be built. Various ways to raise the necessary were put forward and the old stand-by—a raffle—was decided upon for next meeting.

Do not know just what has happened to the boys locally over the past few months, very few of them being heard on the air, unless they chase the DX while I am not around. 4ZJ returned from Magnetic Island full of vim and vigor; down came shortened beam to be replaced by ZL Special and still trying to obtain mythical forward and backward ratio. Rex 4LR had a tour of the Tablelands and called on most of the Amateurs in the far north. Andy 4BW spent a holiday at Cooktown and took rx only, now growling because not much heard on 7 Mc. Norm 6NT quite happy with new call sign and spends most of the night chasing DX or talking to the exclusive gang in Sydney!

Alan 4PS tried to get on 14 Mc., no dice, so went back to 7 Mc. and struck trouble with the rig. Hope to see you on 7 Mc. soon. Vern 4LK getting an odd call on 50 Mc., spends most of leisure time waiting for the band to open. John 4DK quite happy working 14 Mc. and getting more contacts than on 7 Mc. Herb 4JW on 7 Mc., still puts in appearance on sked times—1.30 p.m. Tuesday and Thursday. 4HW looking for ways to prise cards of DX worked. Any comments favourably received.—4RW.

MARYBOROUGH

4AI re-built his broad-banded converter, using a xtal controlled oscillator. Now drags in DX on 21 Mc. Alan is experimenting with all-band tuning units for his driver and final. Had both halyards break within a day or two, so some of the local lads helped him down and up with the 40 ft. poles. 5BG found he had to earth his metal beam pole to prevent it radiating all around. Ron is chasing 20 mx DX on phone and c.w. Recently re-wired his rig for separate heater transformers.

4CB still determined to make the first Maryborough-Brisbane contact on 2 mx. Arch spent most of the long week-end at this job, so far without success. Spending some time welding his 50 ft. tower and won't operate on the "DC" bands until the tower is up. 4GH talks about building a separate workshop. This should enable him to sort things out and find his tx and rx.—4BG.

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SOUTH AUSTRALIA

Having had a spell from journalistic duties for the past month or so, I find it quite difficult to get started. One gets out of touch with local affairs. It seems that young and old enjoyed the annual picnic at Birdwood. The cricket match was an outstanding success. Members were divided into teams under the titles of "Phone" and "C.w." I regret to report that the "Phones" won the match. Council would like to express thanks to all those who helped to make this picnic such a good show. Fellows deserving special mention are our old friends, Arch, Joe and Frank.

The Mount Gambier boys all appear to be busy on a variety of projects from re-building rigs to preparing the car for holidays. 5CH is on leave and is rumoured to have heard a VK3 on 144 Mc.; pity a contact did not result, OM. 5ZAG is building a converter for this band also. John, 5FD is inactive, unless working on one's car can be regarded as activity. Stuart reports that 15 mx is most disappointing at the moment. Erg is equally hopeful on 20 mx. He is also hoping to make DXCC if only the verifications were not so slow in coming along! 5TW is said to be conserving his energies for the coming RD Contest. That could be called long range planning! During the past few weeks I have had the pleasure of visiting Tasmania where I renewed some old acquaintances in 7OM and 7BJ.

This Division's membership is on the up and this year, for the first time, I believe, we are in full strength on the Advisory Committee. Yes, sir, all A.C. personnel are members of the Institute! It was pleasing to note the list of candidates for Council this year. Members are taking a little more interest it sems to me. A ballot will have to be taken! This is all to the good, in my humble opinion. New blood is good blood in an organisation.—SJD.

PRESIDENT'S REPORT

Extracts from the President's Report are submitted for members' perusal.

Membership.—The membership in the Division has improved slightly over the last 12 months with a gain principally in full members. The figures at present are: Full 220, Associate 136. Of the total of 356 there are 93 Country Members divided into 59 Full and 34 Associates.

The Council has worked faithfully and very hard in the interests of the members of this Division and I am very grateful to all of its members for their continued guidance throughout my term of office. The interest of our younger members in the affairs of the Institute and their willingness to accept office on the Council is a heartening sign to those who have helped build the Institute into its present healthy state since the post-war reformation.

Finance.—The finances of this Division reflect the very careful budgeting by our most able Treasurer, Jim Vivian. The fact that Council has not found it necessary to raise the subscriptions for the coming year should please all members as it has pleased councillors. Funds have been conserved in many ways quite often by members offering to do the work for which the Institute would normally have had to pay. A careful study of the Treasurer's Report will show members that although we have nothing to spare each year, Council has not been sparing in its efforts to provide members with what they require.

Technical Committee.—It is hard to assess the value of such a Committee to members because contact is usually made through individual members. However from personal experience there is still a need for such a committee to whom members may go for assistance. As the personnel of the committee varies from time to time enquiries should be made to the Secretary.

T.v.i. Technical Executive Committee.—This committee has only just been formed with an inaugural meeting on 31st Jan. Its functions will be to advise Council on the ways of assisting the Institute to combat t.v.i. Members are sure to see and need more of the works of this committee as the days go by.

Lectures.—These ranged from Film Evenings to Technical Papers and Demonstrations. A departure from the usual was the members' display which was accompanied by lecturettes on the construction and operation of the equipment shown by the owners. Suitable prizes were donated by the Trade and Council members. This type of evening was so successful that it will again form part of the programme this year. Mr. R. W. Lee, assisted by Mr. Ian Wall (5ZAA) and Mr. Denzil Kelly (5DK), provided members with a real evening of Television and its intricacies. It was certainly the only time that 5PS could thumb his nose at the Chairman and get away with it! To Philips Industries at Henden we are very grateful for the demonstration of, what was to many, their first view of a working Television Camera, Transmitter and Receiver. To all those who assisted to make the meetings a success I tender my thanks as Programme Organiser.

Hobbies and Models Exhibition.—The Institute was invited by the Organisers to set up a typical Amateur Station in the Adelaide Town Hall Annexe from 22nd March to 24th March inclusive. As there was little time available for any major construction, equipment was borrowed from Messrs. Austin, Bowen, Paris and Sapplatzer. Although there was little

chance of good outside contacts due to very bad electrical interference, the display was impressive and did a lot of good to improve the public's ideas on Amateur Radio as a hobby. The excellence of the display was due to the time which Mr. Jim Paris was able to give during the days of preparation. To those who tried hard to make contacts with 5WI, the Institute is grateful. The Organisers were very thrilled with the co-operation that they received from the Institute and have asked again that we assist them during March, 1956.

Tape Recordings and Technical Data.—In order to hold the interest of the country members, Council has continued its policy of supplying tape recordings of technical lectures to centres where a recorder is available. In order to supplement those already made, a new series is to be made of technical topics which should interest members.

Official Station 5WI.—Mr. C. J. Othen (5ON) found that he would have to relinquish the office of operator early last year and since that time the station has been operated by the President. Sometimes Council have wondered if the Sunday morning broadcasts to our country members are fulfilling a real need, but I can assure everybody that these broadcasts are looked forward to in the shacks of our distant friends.

Magazine.—Following an appeal for technical articles earlier this year, the sub-editor has received four already with a promise of two more. The honours are shared equally by country and city members. More are still needed to pass our previous record and I am sure that there is plenty left to write about.

Social Entertainment.—General Motors Holden provided members and their wives and friends with an evening's entertainment, in the Assembly Hall at Prince Alfred College. The highlight of the evening was the remarkable display of scientific progress demonstrated in "A Preview of Progress." Our thanks are due to Mr. A. J. Gibbs, of Holden's, for arranging the evening for us and to the Headmaster of the College for allowing the use of the fine hall. As a token of its appreciation for the assistance that the Institute receives from the College, Council presented on behalf of the members, a very fine Chemistry Text Book for use in the Memorial Library.

The Christmas Social was held once more in the usual meeting place and the entertainment was in the form of films. As a simple function designed to bring members together at Xmas time it again succeeded. As our official guest we had Mr. Geoff. Clarke, M.P., who, oldtimers will remember, was a Foundation Member of the Institute. Mr. Clarke was very happy to express his personal thanks for the invitation, and also to thank the members of the Institute for their offer to the Government to assist in the formation of a communications network. Mr. Jim Sullivan was particularly mentioned for his capable handling of the scheme.

Silent Key.—It is with sorrow that I have to record the passing of an oldtimer in Charlie Chael (5CR). He was a fine OM of Amateur Radio.

General.—I wish to express the gratitude of the Institute to the QSL Officer, Mr. George Luxon (5RX). He has done a ten-year period so quietly and efficiently that George and QSL cards are synonymous.

In the background, but always punctilious in keeping schedules, is the Communications Officer, Mr. Joe Kilgariff. He has handled Federal messages this year.

In March of 1955 a councillor of long and valuable service retired from office. As a token of their esteem for Joe McAllister, the members presented him with an electric clock. Council had earlier honoured him with Life Membership of the Institute.

And now as I retire from the Presidency of this Division, I wish to tell you that my term of office has been a wonderful experience. I have enjoyed every moment of the two years' term which has made quite heavy demands on my time at home and I must pay a sincere tribute to my wife and family for the way in which they have assisted me to carry out my duties as President. I am more than ever convinced that our strength lies in the fact that all our members work towards a common goal, the betterment of their fellow Amateurs and Amateur Radio.

I am sure that you will support your new President in the coming year and I wish him the best of good fortune in his term of office.

(Signed) Gordon Bowen, VK5XU.

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WESTERN AUSTRALIA

The January meeting of the Division was held in the Tech. School Annexe. The names of the Divisional representatives on the Advisory Council were released for publication, and are as follows: 6AW, 6OR, 6ZAA, 6MK, 6NF and 6RU. An important item of agenda was the election of the Federal Councillor. 6GM had resigned the position, as he would be unable to attend the Federal Convention proposed to be held this year. The election resulted in the appointment of Ron 6KW as Councillor. A vote of thanks to George was recorded, in appreciation of his long term of service.

6OR moved that certain action be taken re solving the present position of limited licences under the Constitution of this Division. He proposed that a sub-committee be formed to make enquiries and submit recommendations to the general meeting. The motion was carried and 6MK and 6BO were elected to form the sub-committee. We believe Tom and Rollo are at work and are making good progress.

6MK rounded off the evening with a lecture on t.v.i. and the t.v.i. proofing of transmitters, illustrating his lecture with a piece of American equipment—a band-switched 80w. tx 3.5 to 144 Mc.

Tom also promised a film evening in the near future; films of his recent tour of England and the Continent. This should be very interesting.

Don 6HK and Wally 6ZAA recently returned from their tour of the VK3-VK3 shacks. We believe they had an interesting trip, also the VK6 call on 144 Mc. caused some near heart failures in certain VK3 shacks!

A new call has bobbed up on 7 Mc.—6EE, Bob, late 2ASH. Glad to meet you Bob and hope you make many friends in VK6.

Incidentally, 7 Mc. c.w. DX has been very good lately. UA3, UC, UI, YU and JA coming through at good strength. How are you making out Dave?

An opportunity, rare in Amateur Radio, will shortly take place. VK6 will be providing radio communications for the Narrogin Car Club Trial—the local Redex. Full details are not yet to hand, but tentative arrangements re equipment and men are being made. This should be very good publicity for Amateur Radio in this State. For those who wish to listen, the frequencies are 3.34 and 5.77 Mc. The date is week-end ending March 5.—6BE.

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TASMANIA

The general meeting for February was held on the 1st of the month, with President 7FJ in the chair and Secretary Bill Tait in attendance. A representative gathering turned up and in the general business section of the meeting, several suggestions in connection with the Olympic Games came under discussion.

Federal Executive approval has been given to a suggestion emanating from Mark 7MH that a relay be arranged conveying greetings from Greek Amateurs near Mt. Olympus in Greece to the Australian Olympic Games Committee. The relay to be handled this end via Amateurs operating on or near Mt. Olympus in Tasmania.

Other suggestions discussed, and under consideration are (1) That this year's VK-ZL Contest be held to coincide with the opening of the Olympic Games, and (2) That world wide greetings be relayed to the Games Committee from Amateurs in all parts of the world.

A committee was also appointed to investigate the equipment and operator angles of the Emergency Network, the immediate aim being co-operation with the Search and Rescue Section of the Bush Walking Club.

At the conclusion of business, Mr. Tas. Fehlberg delivered a lecture on his recent trip around the world. Mr. Fehlberg used coloured slides to illustrate his lecture and his effort was greatly appreciated by all present.

Athol 7AJ is convalescing and hopes to be active again soon. Better stoke up the old rig Athol and let's hear from you. Doc 7LL has gone on a jaunt to England and will be away for about a year, so doubtless he will entice some new equipment home with him when he returns. Lon 7LJ is in the middle of a rebuilding campaign, but is taking time off now and then to think about possible sites for a National Field Day venture. Lon and Ken 7KA anticipate running a Geloso plus 807 for the portable 7 Mc. tx and at the time of writing are seeking a genemotor power supply for the job. I understand also that Ken will shortly come to light with a brand new tx, complete with all mod. cons. and t.v.i. proof. This, plus a recently acquired AR7, should make Ken a force to be reckoned with in the next R.D. Contest. That reminds me also that Peter 7PA is sitting pretty with a Superpro rx. What about it, Peter? Reach for that send switch and let's see what happens.

7CH has been holidaying in the Sandford area, but I am not sure whether Snowy took any equipment with him, or whether it is a holiday in the complete sense of the word. Len 7LE has been camping, but is now back in harness again.

Doubtless all members are by now aware that the Annual General Meeting and Dinner will take place at Bronte Park on 10th March. Organisation is in the capable hands of Reg 7WN and colleagues, and everything seems set for a really good function. Harry 7BR told me that he would probably be in a position to handle any mobile work that any of the visitors contemplate on the journey to Bronte, so if any of you mobile-equipped gentry are interested, you had better get in touch with Harry, pronto, if you have not already done so.

Greetings are extended to 5ZAH, who will be living down this way for some time. Unfortunately, I do not know the name at the time of writing, but we won't let that detract from the welcome. I guess that VK5 call will soon be changed to one with a VK7 prefix. Tom 7AL has been subjecting himself to the rigours of annual Army camp life, but has bought a nice new sky-blue Zephyr as compensation. Who is going to keep the dust off the rig now Tom? It is bound to collect with such a counter attraction. Nicky 7RY is operating crystal control, but a new v.f.o. is under way and should be in operation in the near future.

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PAPUA—NEW GUINEA

As a sub-editor has not yet been appointed for this year, 9RM was asked to supply notes.

This was our first year as a fully-fledged Division, and at year's end I am pleased to say that nearly all Amateurs in the Territory are within its ranks. Considering the peculiar conditions prevailing up here, whereby most residents go south for leave every two years, there are usually several of the fraternity away enjoying the fruits of past labours. At times it becomes quite a problem to make up a quorum of councillors to deal with Divisional matters. That we have been able to do this with such a small Division speaks well for the interest and activity of its members and we all look forward to continued success and growth in the ensuing year.

On leave at this moment is our first President 9FN, who needs no introduction here or in VK4 land and who will be away for the next three months. Also others taking the same treatment are 9AU from Wewak and 9DT of Moresby, both very active members.

The purchase recently of a large rig for the use of 9WI for local hook-ups on Sunday morning throughout the Islands should go a long way to welding the Division even closer, as the topography in the Territory is not exactly conducive to 7 Mc. QSOs. Rabaul has always been a tough one to contact, and with quite a few members located there on the rim of a submerged volcano, we look forward to, at least, putting some added r.f. in their direction.

We welcome two new members in 9AS at Wewak and 9TZ near Mt. Hagan area, who have been active in the hook-ups since joining up. Also leaving us for keeps is the oldest member, namely Ron 9RC, after 35 years in New Guinea—any contenders to dispute this? Ron has always been active over the years and now looking forward to a well earned rest among the VK3 gang. Incidentally, he has held a call since 1910 and has seen it all from slop jars and cage antennae, right up to the t.v. era coming up and no doubt will shortly be conversant with t.v.i.!

As your scribe is holding the fort until a new sub-editor for local notes is duly elected for this year, I would welcome anything of interest for inclusion in these notes.—9RM.

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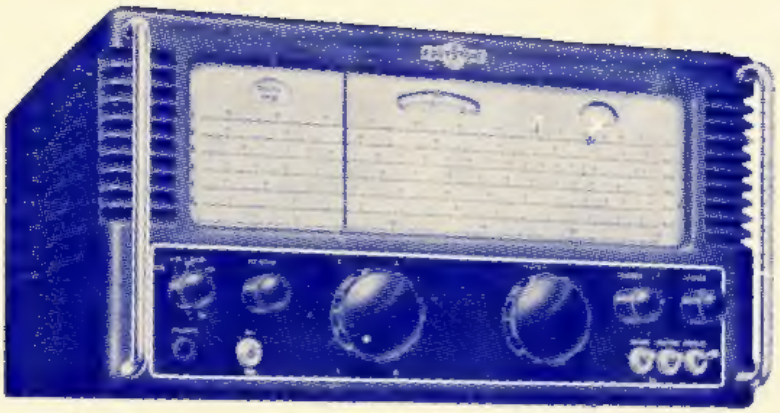

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